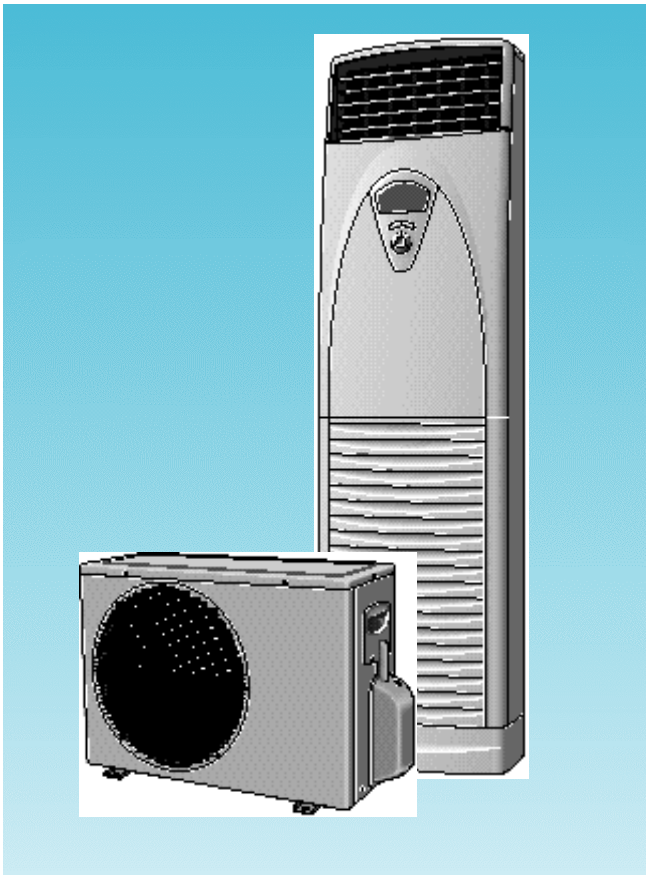
SAMSUNG

PACKAGED AIR CONDITIONER

APH180HD/ED/CD

SERVICE Manual

AIR CONDITIONER



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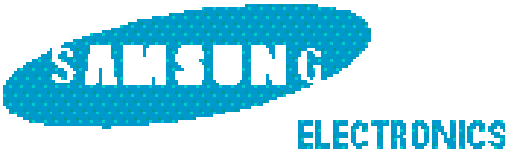

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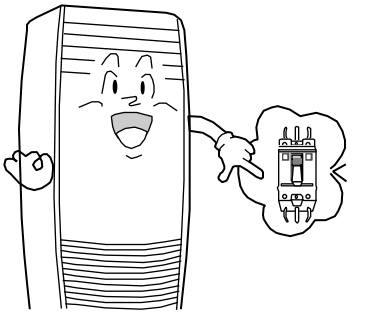
1. Precautions

1) Turn off the the power.
Be sure to turn off the power before attempting to repair the unit such as the disassembly of the unit.

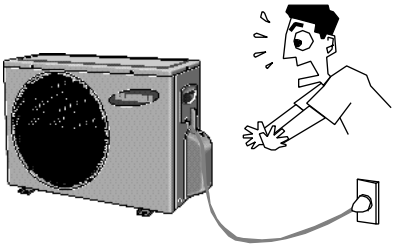
Turn off the sub power switch separately installed.



2) Be careful of electric shock
When checking the circuit with the power connected in unavoidable circumstances, take special care not to touch the live parts. There is a danger of electric shock.

3) Use of appropriate parts
Be sure to use the genuine parts of the relevant model when it is necessary to replace parts. (Replace parts instead of repairing with regard to the malfunctioning of electric contact areas. Never attempt to modify the unit. It is extremely dangerous for the consumer to attempt to repair the unit on his(her) own.)

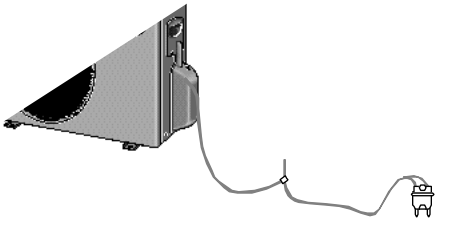
4) Use of proper tools
Use appropriate tools for repair, and use measuring equipment after accurate calibration. Using worn tools may result in problems, including poor contact and poor connection.



5) Avoid damage to electric wire or electric cord.
Check the electric cord or electric wire for any damage during repair.
Be sure to replace it if damaged.

6) Avoid intermediate connection of the electric cord.
Never attempt to make an intermediate connection by cutting the middle area of the electric cord or make a connection to the power receptacle as it is very dangerous, causing problems or fire.

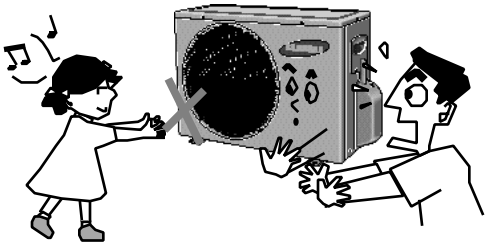
No connection with the power receptacle



7) Checking of insulation
Be sure to check the insulation resistance after completion of the assembly work.
(Check whether the insulation resistance of the electric wire and grounding terminal is over 30MΩ by using the insulation resistance tester, and then connect the power source.)

8) Checking of grounding
Check the grounding condition, and perform repair if poorly grounded.

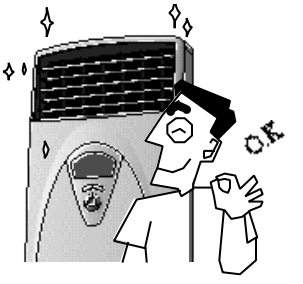
9) Checking of installation condition
Check the installation condition of the unit, and perform repair if there is any defective area.
If the unit remains in an unstable installing condition, install it at a new site.



10) Be careful of children
As the repair of the unit involves a lot of dangerous elements, do not allow children to approach nearby during repair work.

Cleaning

Upon completion of the repair, clean the air conditioner and surrounding area, and inform the customer of completion of the repair.



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2. Product Specifications

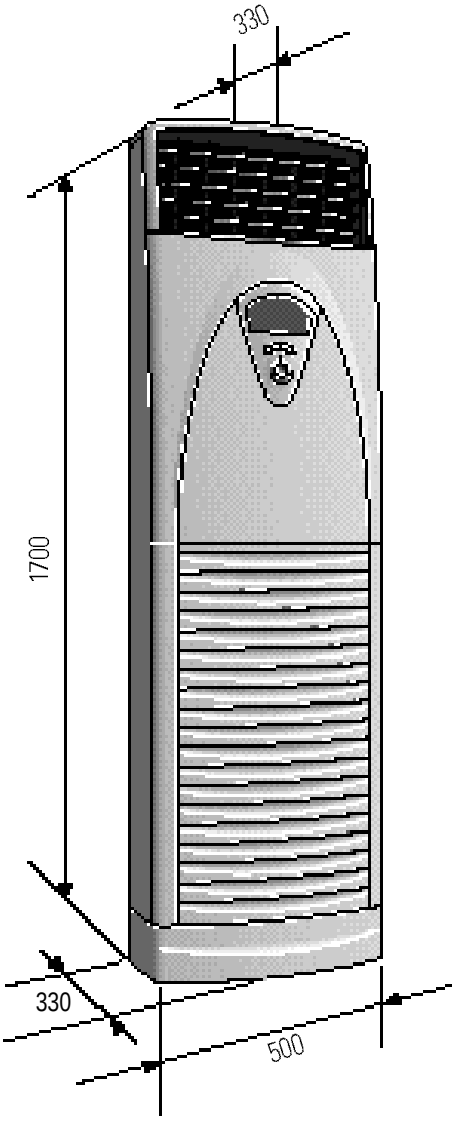
2-1 Table

Item					Model APH180HD	Model APH180ED	Model APH180CD
Size	Indoor unit	Unit	Width x Height x Depth	mm	500 x 1700 x 330	500 x 1700 x 330	500 x 1700 x 330
		Packed	Width x Height x Depth	mm	590 x 1785 x 465	590 x 1785 x 465	590 x 1785 x 465
	Outdoor unit	Unit	Width x Height x Depth	mm	765 x 532 x 280	765 x 532 x 280	765 x 532 x 280
		Packed	Width x Height x Depth	mm	884 x 593 x 380	884 x 593 x 380	884 x 593 x 380
Weight	Indoor unit	Unit		kg	35	38	35
		Packed		kg	41	44	41
	Outdoor unit	Unit		kg	40	40	38
		Packed		kg	46	46	44
Electric characteristics	1. Capacity(Cooling /Heating)			W	4700/5600	4700/6400	4700
	2. Power consumption(Cooling/Heating)			W	1900/1900	1900/2700	1900
	3. Current consuption(Cooling/Heating)			A	9.5/9.5	9.5/14	9.5
	4. Noise	Indoor unit	High	dBA	45	45	45
	(Cooling/Heating)	Outdoor unit		dBA	55	55	55
Indoor unit	1. Evaporator		Construction	Row x Step	2x24	2x24	2x24
			Fin		WAVE 1.4	WAVE 1.4	WAVE 1.4
			Capillary tube		ø1.3x3	ø1.3x3	ø1.3x3
	2. Blower motor		Capacitor		450V/4.0uF	450V/4.0uF	450V/4.5uF
			RPM	HIgh	500	500	530
				Medium	450	450	480
				Low	400	400	430
	3. Fuse			V/A	250V 3.15A	250V 3.15A	250V 3.15A
Outdoor unit	1. Condenser		Construction	Row x Step	2x20	2x20	2x20
			Fin		D5 1.7	D5 1.7	D5 1.7
			Capillary tube		Ø2.0x1	Ø2.0x1	Ø2.0x1
	2. Refrigerant volume		R22	g	1,450	1,450	1,200
	3. Compressor		Maker		SAMSUNG	SAMSUNG	SAMSUNG
			Model		48B 180MV 1E7	48B 180MV 1E7	48B 180MV 1E7
			Type		ROTARY	ROTARY	ROTARY
			Capacitor		420V/45uF	420V/45uF	420V/45uF
			Crankcase heater	W	40	40	-
	4. Fan motor		Capacitor		450V/2.5uF	450V/2.5uF	450V/2.5uF
			RPM		1050	1050	1050
	5. Service v/v		High pressure side	inch	3/8	3/8	1/4
			Low pressure side	inch	1/2	1/2	1/2

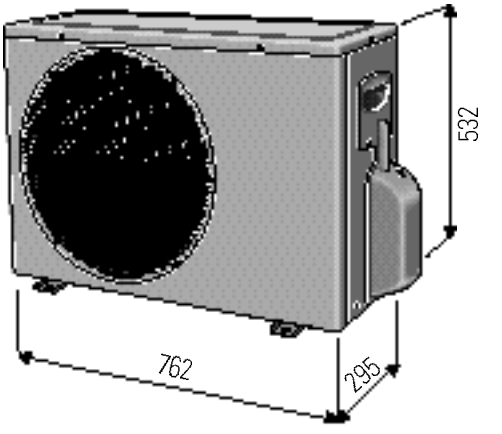
2-2 Dimensions

unit : mm

Indoor Unit

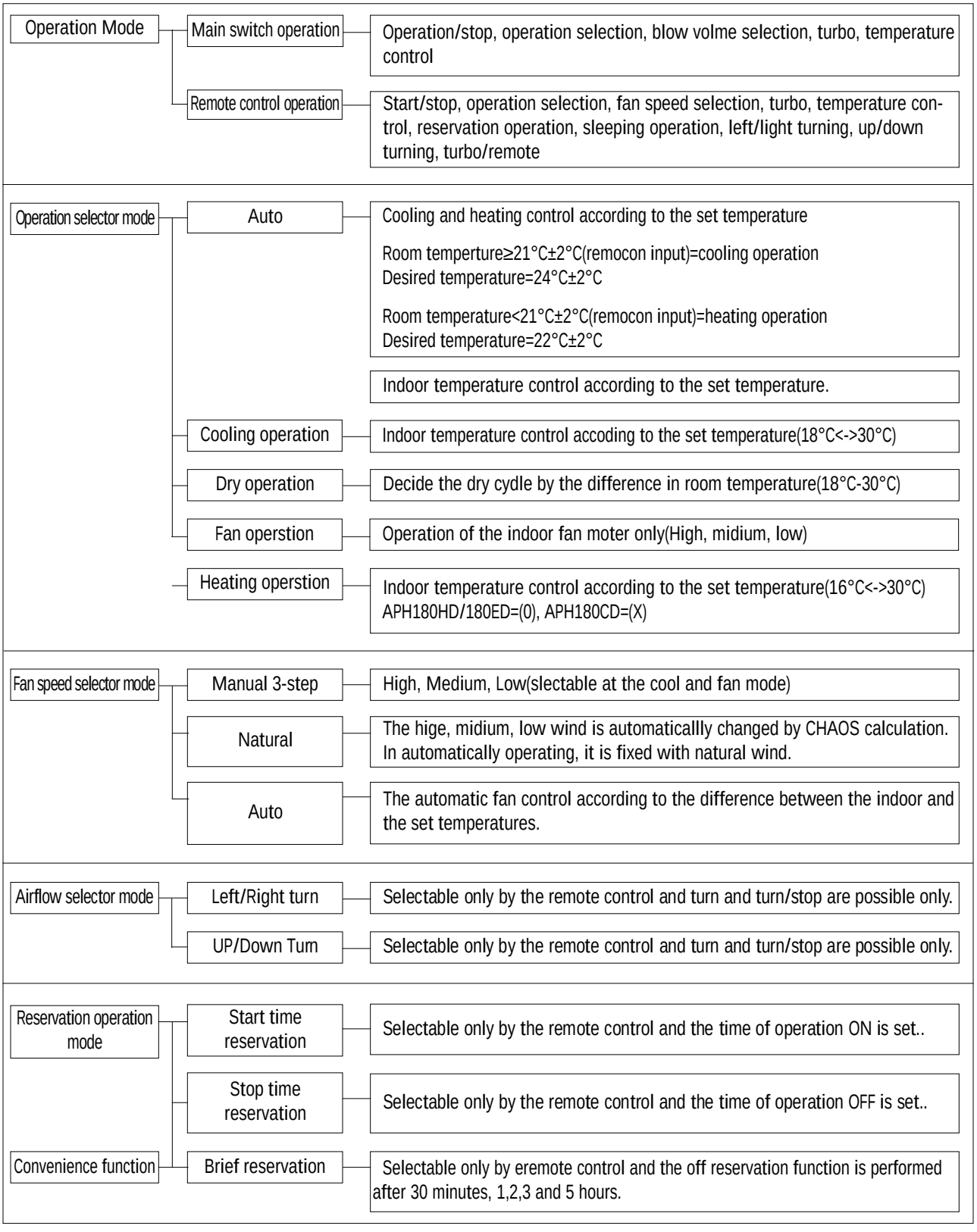


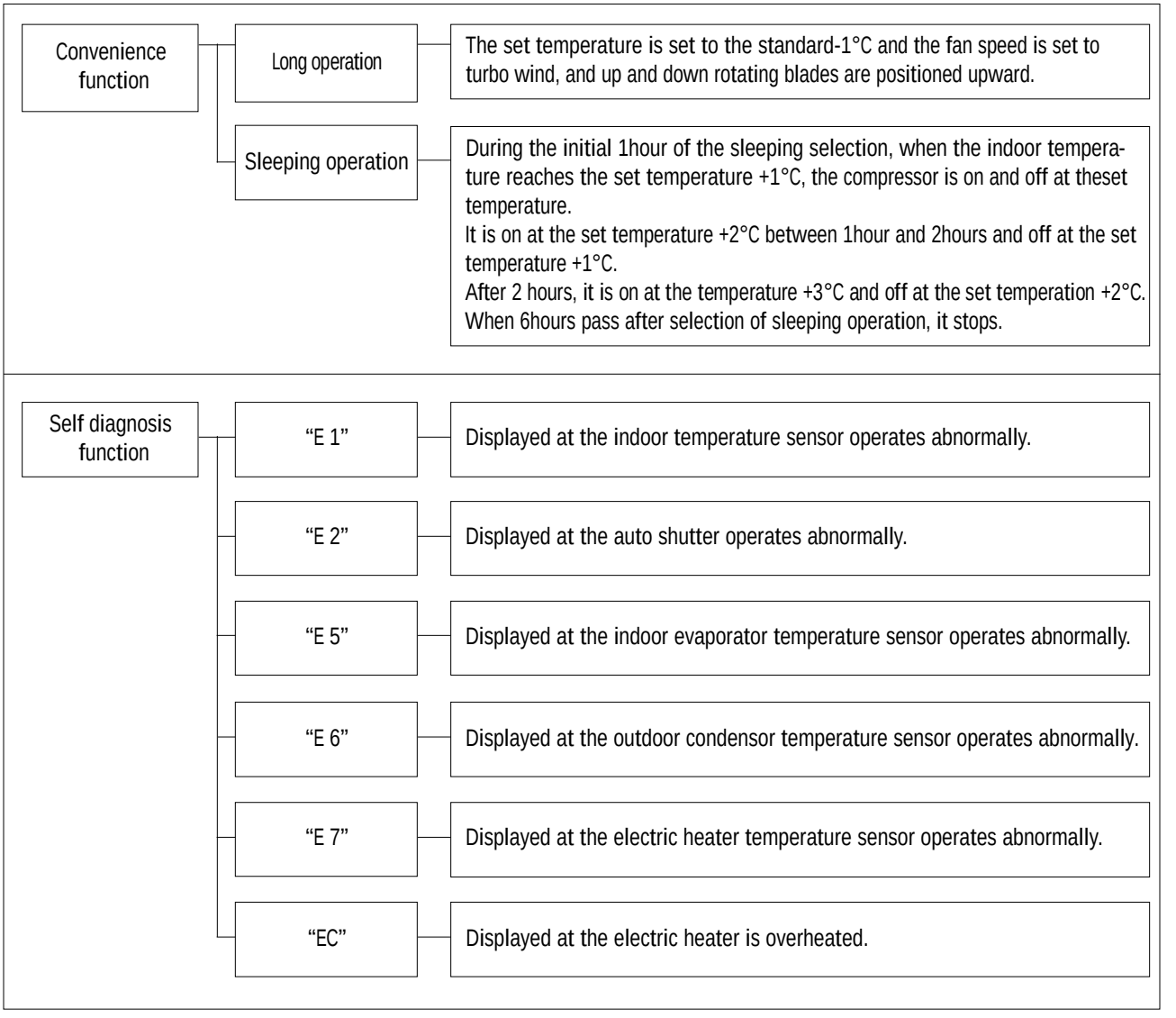
Outdoor Unit



3. Operating Instructions

3-1 Control System Chart


Operation Mode
Main switch operation
Operation/stop, operation selection, blow volme selection, turbo, temperature control
Remote control operation
Start/stop, operation selection, fan speed selection, turbo, temperature control, reservation operation, sleeping operation, left/light turning, up/down turning, turbo/remote
Operation selector mode
Auto
Cooling and heating control according to the set temperature
Room temperture≥21°C±2°C(remocon input)=cooling operation
Desired temperature=24°C±2°C
Room temperature<21°C±2°C(remocon input)=heating operation
Desired temperature=22°C±2°C
Indoor temperature control according to the set temperature.
Cooling operation
Indoor temperature control accoding to the set temperature(18°C<->30°C)
Dry operation
Decide the dry cydle by the difference in room temperature(18°C-30°C)
Fan operstion
Operation of the indoor fan moter only(High, midium, low)
Heating operstion
Indoor temperature control according to the set temperature(16°C<->30°C)
APH180HD/180ED=(0), APH180CD=(X)
Fan speed selector mode
Manual 3-step
High, Medium, Low(slectable at the cool and fan mode)
Natural
The hige, midium, low wind is automaticallly changed by CHAOS calculation.
In automatically operating, it is fixed with natural wind.
Auto
The automatic fan control according to the difference between the indoor and the set temperatures.
Airflow selector mode
Left/Right turn
Selectable only by the remote control and turn and turn/stop are possible only.
UP/Down Turn
Selectable only by the remote control and turn and turn/stop are possible only.
Reservation operation mode
Start time reservation
Selectable only by the remote control and the time of operation ON is set..
Stop time reservation
Selectable only by the remote control and the time of operation OFF is set..
Convenience function
Brief reservation
Selectable only by eremote control and the off reservation function is performed after 30 minutes, 1,2,3 and 5 hours.


Convenience function
Long operation
The set temperature is set to the standard-1°C and the fan speed is set to turbo wind, and up and down rotating blades are positioned upward.
Sleeping operation
During the initial 1hour of the sleeping selection, when the indoor temperature reaches the set temperature +1°C, the compressor is on and off at theset temperature.
It is on at the set temperature +2°C between 1hour and 2hours and off at the set temperature +1°C.
After 2 hours, it is on at the temperature +3°C and off at the set temperation +2°C.
When 6hours pass after selection of sleeping operation, it stops.
Self diagnosis function
“E 1”
Displayed at the indoor temperature sensor operates abnormally.
“E 2”
Displayed at the auto shutter operates abnormally.
“E 5”
Displayed at the indoor evaporator temperature sensor operates abnormally.
“E 6”
Displayed at the outdoor condensor temperature sensor operates abnormally.
“E 7”
Displayed at the electric heater temperature sensor operates abnormally.
“EC”
Displayed at the electric heater is overheated.

3-2 Key Types and Functions

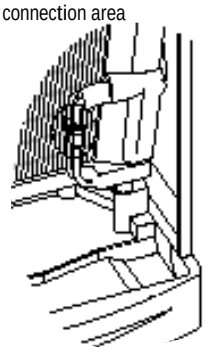
KEY NAME	KEY	Kinds of Key
Operation/ stop	Operation and stop of operation - Start durning turn on once, and stop durning turn on again - Continous operation is impossible	TACT
Operation selection	Change of the operation mode -Each one every turn on, "AUTO" → "COOL" → "DRY" → "FAN" → "HEAT"is selected sequentially. (standard = auto) - continued operation is impossible.	TACT Heat=APH180CD(X)
Fan speed	The indoor fan motor speed is set. -Cooling operation Each one every turn on, "LOW" → "MEDIUM" → "HIGH" → "AUTO" is selected sequentially. (standard = auto) - In fan operation "LOW" → "MEDIUM" → "HIGH" is selected sequentially. (standard = Low) - In auto and dry operation, the fan speed is selscted with "Auto" or "Natural" so that the key input is ignored. - Continuous operation is impossible.	TACT
Temperature setting (increasing)	The set temperature is increased. -Temperature:the set temperature is increased 1˚C each one every turn on. Cooling operation:18˚C → 30˚C Heating operation:16˚C → 30˚C -The key operate only when the heat, cool, dry operation. -One time and continuous operation is possible.	TACT Heat=APH180CD(X)
Temperature setting (decreasing)	The set temperature is drcreased. -Temperature:the set temperature is decreased 1˚C each one every turn on. Cooling operation: 30˚C →18˚C Heating operation:30˚C → 16˚C -The key operate only when the heat, cool, dry operation. -One time and continuous operation is possible.	TACT Heat=APH180CD(X)
Turbo	Turbo function is on and off. -Selectable all over operation mode. -Continuous operation is impossible.	TACT

3-3 Check and Test Operation

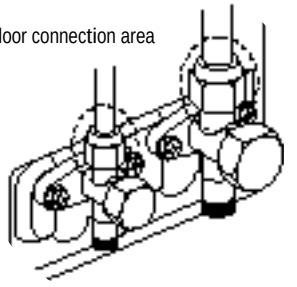
- Be sure to check the following again after completion of installation.

1. Check the piping connection area for any gas leakage.

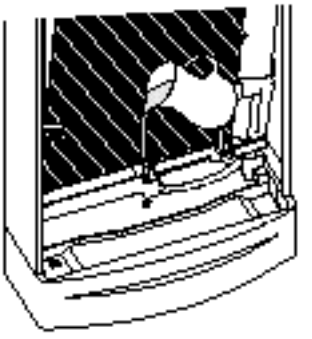
Indoor connection area



Outdoor connection area

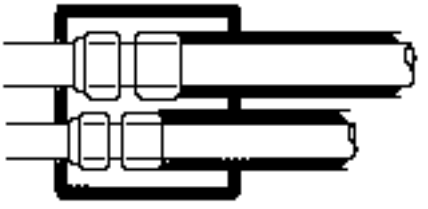


2. Is the drain hose properly connected?

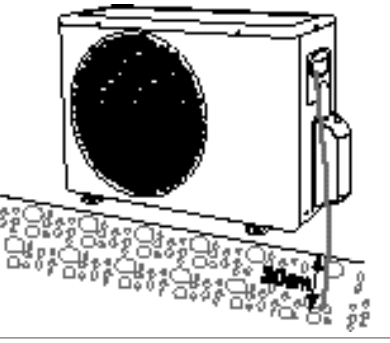


3. Is the insulation of the piping in good condition?

Insulation



4. Is grounding properly made?
(In case of disconnecting ground on electric panel board.)

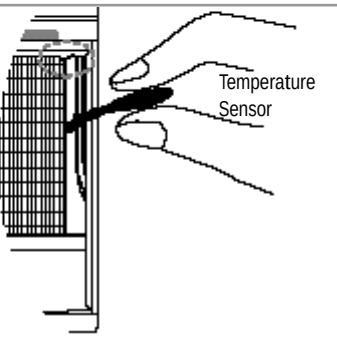


3-2-4(b) Test Operation

- After checking, read the owner's instructions carefully, and perform a test operation. Then deliver the unit to the customer.
(When delivering the unit, be sure to read carefully and follow the contents of the owner's instructions.)

Caution

1. Be sure to check whether the service valve is opened before attempting to perform the test operation.
2. Never attempt to start test operation by force pressing the electronic contactor as it is very dangerous.
(This is very dangerous as the protective device does not work.)
3. Be sure to perform the test operation after installment.
It is easy to start the test operation in winter if you increase the sensor temperature to 23°C ~25°C by holding the indoor temperature sensor (Cooling operation)

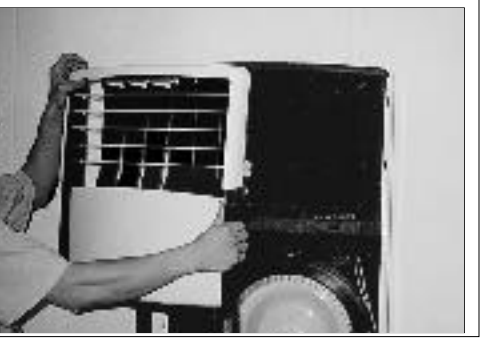


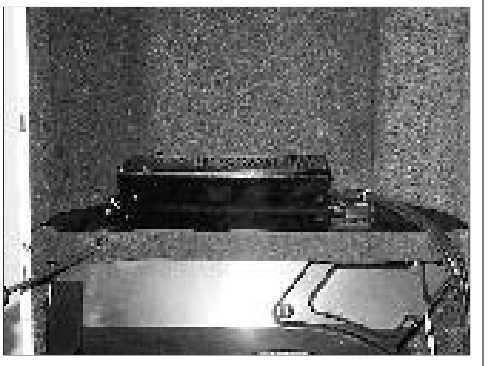
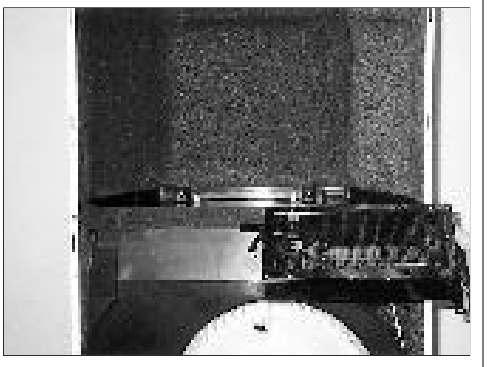
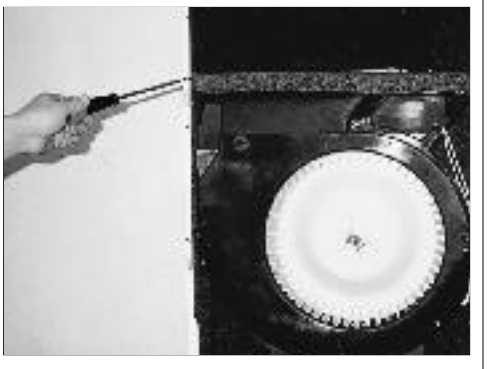
4. Disassembly and Reassembly

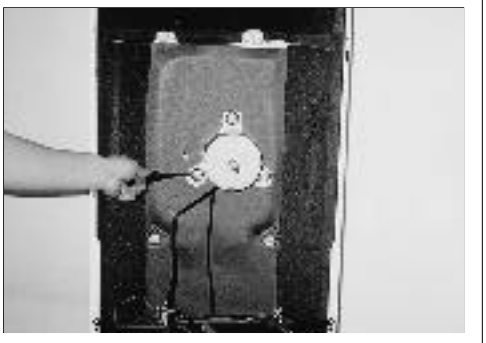
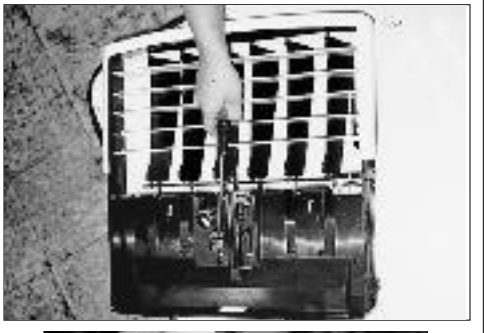
Stop operation of the air conditioner and remove the power before repairing the unit.

4-1 Indoor Unit

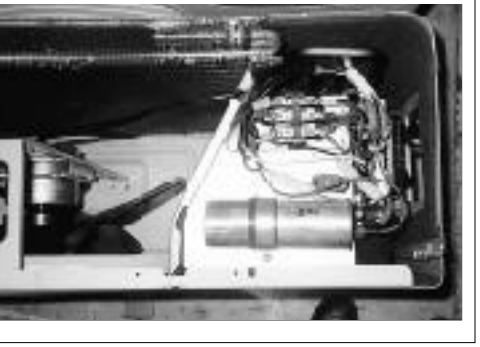
No	Parts	Procedure	Remark
①	Front Grille	1) Packaged air conditioner indoor unit.	
		2) Open the inlet grille, and remove the connector ring.	
		3) Loosen nine screws to remove the cover connect and cover evap'L.	
		4) Loosen one screws and pull the downward.	

No	Parts	Procedure	Remark
		5) To remove the Deco Low, remove the right and left side two screws, and then seperate the wire connector.	
		6) Remove the four screws, and remove the cover top. Then seperate the connector wire	
		7) Remove the six screws, and pull the upward cover top PCB.	

No	Parts	Procedure	Remark
		8) Loosen the right and left side two screws, and then push the upward cover front.	
		9) Remove the five screws,and then remove the seven screws on the Duct up.	
			

No	Parts	Procedure	Remark
		10) Loosen one bolt to remove the blower.	
		11) Loosen the five locking screws, and remove the lower duct on the front side. Remove the left and right side two screws, and the upper side two screws. And then seperate the shutter body	

4-2 Outdoor Unit

No	Parts	Procedure	Remark
		1) Loosen the seven screws on the cover top, and remove the cover top.	
		2) Loosen the two screws on the cover control, and remove the cover control.	
		3) Loosen the six screws in the side cabinet, and remove the side cabinet.	
		4) Connection of the control box wiring.	

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5. Troubleshooting

Troubleshooting procedures	
1	• Check the items to check first time.
2	• Check the self-diagnostic mode and action method.
3	• Check in detail the troubled parts according to the sequence of ”trouble shooting by the phenomena”.

5-1 The items to be checked first time

1) Is proper the power voltage ?
The power voltage shall be of 187V-253V 50Hz.

2) Is the cable connected correctly between the indoor and outdoor unit?
The indoor and outdoor units shall be connected with 8wires including the grounding.
Check whether the wires of indoor and outdoor units are connected with the correct wire no. and terminal board no.

3) The phenomena in the following table is not related to the fault of air conditioner.

No	Phenomena	Description
1	- Heating operaation The compressor does not operated even though the set temperature is set higher than the indoor temperature. - Cooling operation The compressor does not operated even though the set temperature is set lower than the indoor temperature.	- The operation of compressor is delayed for 3minutes for the protection of compressor when it is off and on again. - The compressor operates nomally after 3 minutes even the Initial power is on.
2	- Fan speed is not adjusted durning the auto, dry, turbo and long operation.	- The fan speed is automatically adjusted durning the auto, dry, turo and long operation.
3	- The temperature is not adjusted durning the auto, dry, turbo and long and fan operation.	- The set temperature is automatically set durning the auto, dry and long operation. - The wind blow operation is the mode to circulate the indoor air.
4	- The compressor repeates the stop and start with the interval of several minutes durning dry.	- At the dry operation, the set temperature and the indoor temperature are compared to adjust the compressor start/stop time in order to dehumidify.
5	- Durning the heating operation, the lamp “on deice” is on at the control panel and the compressor oprates.	- The deice operation is being performed in order to melt the frost by outdoor unit and its maximum time is 9 minutes.
6	- Durning the heating, the outdoor unit fan motor repeats start/stop or even the compressor repeats the starts the start snd stop.	- It is the function to prevent the overheating of the indoor evapolator, where the temperature of indoor unit heat exchanger reaches 52°C, the normal operation is done.
7	- Durning the heating, the compressor and outdoor unit fan motor operate but indoor unit fan motor does not operate.	- This is the function to prevent the cooling air incoming to the indoor, where the temperature of indoor evaporator reaches 27°C, the indoor fan motor operates.

5-2 Display of the result of self-diagnostic and check items on the control panel

No.	Power lamp	Temperature display	Cause	Counter measure	Remark
1	Flickering (1Hz)	E1	- Indoor temperature sensor open - Indoor temperature sensor short	- Check short/open of PCB parts - Replacement of temperature sensor	APH180CD APH180HD APH180ED
2	Flickering (1Hz)	E2	- Shutter motor defect - Shutter sensor defact - Connector wire contact bad	- Replacement of shutter motor - Replacement of shutter sensor - Replacement of connector wire	APH180CD APH180HD APH180ED
3	Flickering (1Hz)	E5	- Indoor evaporator sensor open - Indoor evaporator sensor short	- Check short/open of PCB parts - Replacement of temperature sensor	APH180HD APH180ED
4	Flickering (1Hz)	E6	- Indoor condensor sensor open - Indoor condensor sensor short - Connector wire contact bad	- Check short/open of PCB parts - Replacement of sensor - Replacement of connector wire	APH180HD APH180ED
5	Flickering (1Hz)	E7	- Electric heater sensor open - Electric heater sensor short	- Check short/open of PCB parts - Replacement of temperature sensor	APH180ED
6	Flickering (1Hz)	EC	- Electric heater overheated - Indoor fan motor stocked - Indoor fan motor fault	- Check the overheating sensor - Remove the cause of the indoor fan motor stocking - Replacement of indoor fan motor	APH180ED

"E1"AND "E2" ARE DISPLAYED ON THE TEMPERATURE DISPLAY ONLY WHEN THE OPERATION STOPS.

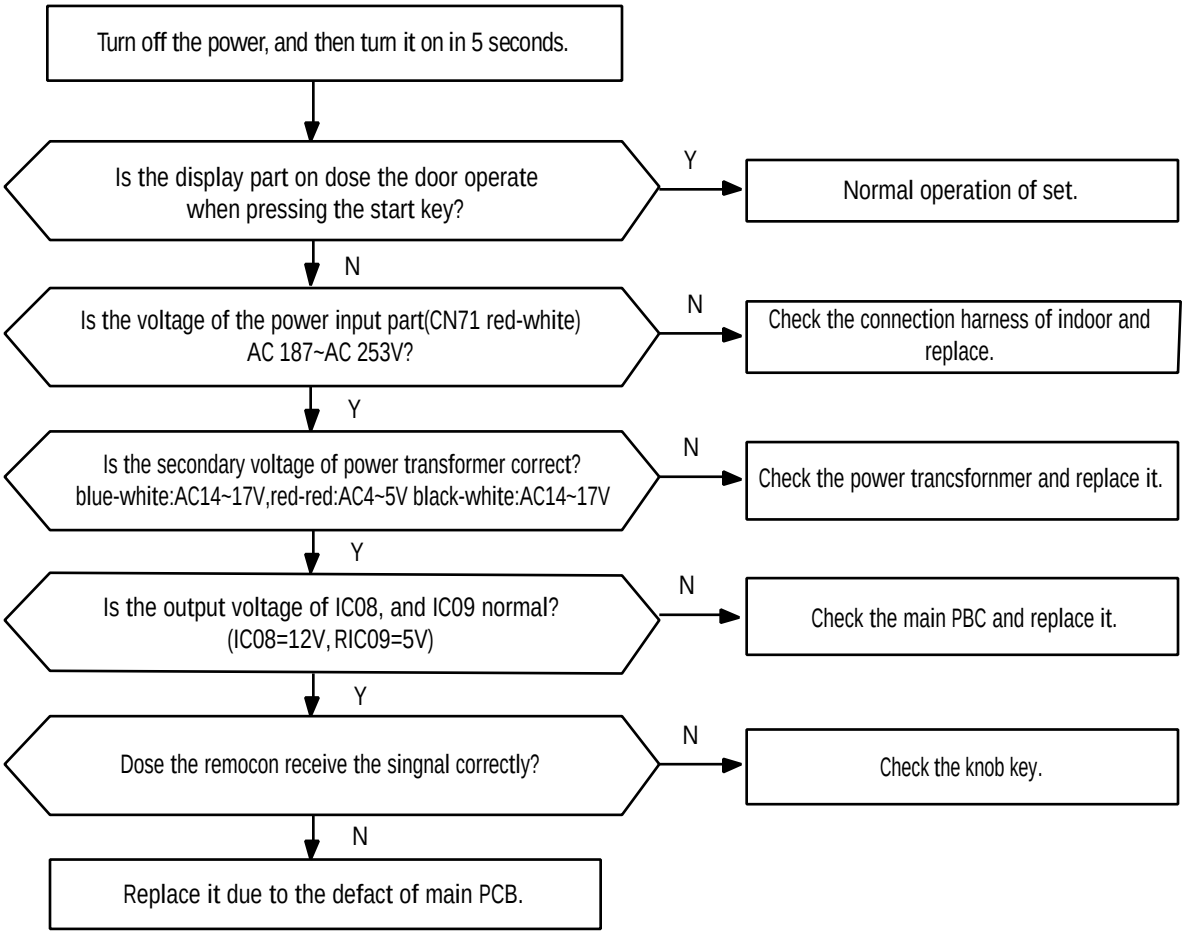
5-3 Trouble shooting by phenomena

5-3-1 When it is not Power on.(When it is not display)

1) Trouble cause
   ① When the power voltage is out the operating range or the power cable contact is bad.
   ② The transformer is defect or it's connection is bad.
   ③ The fuse of main PCB is broken or the PCB with a defect.
   ④ The panel PCB has it's defect.
   - The knob switch with a poor assembly, V.F-display defect.

2) Check items
   ① Is the power voltage normal?(AC 187V~AC 253V)
   ② Is the contact of power cable good?
   ③ Is the power fuse(F701, F702) AND PCB fuse(F101)not disconnected?
   ④ Is the contact of connector at primary and secondary side of power transformer?
   ⑤ Is the output voltage of IC08(KA7812) normal?(DC 11.5~DC 12.5V)
   ⑥ Is the output voltage of IC09(KA7805) normal?(DC 4.5~DC 5.5V)
   ⑦ Is the connection of harness(wire connector-control)of main PCB panel good?

3) Sequence of check

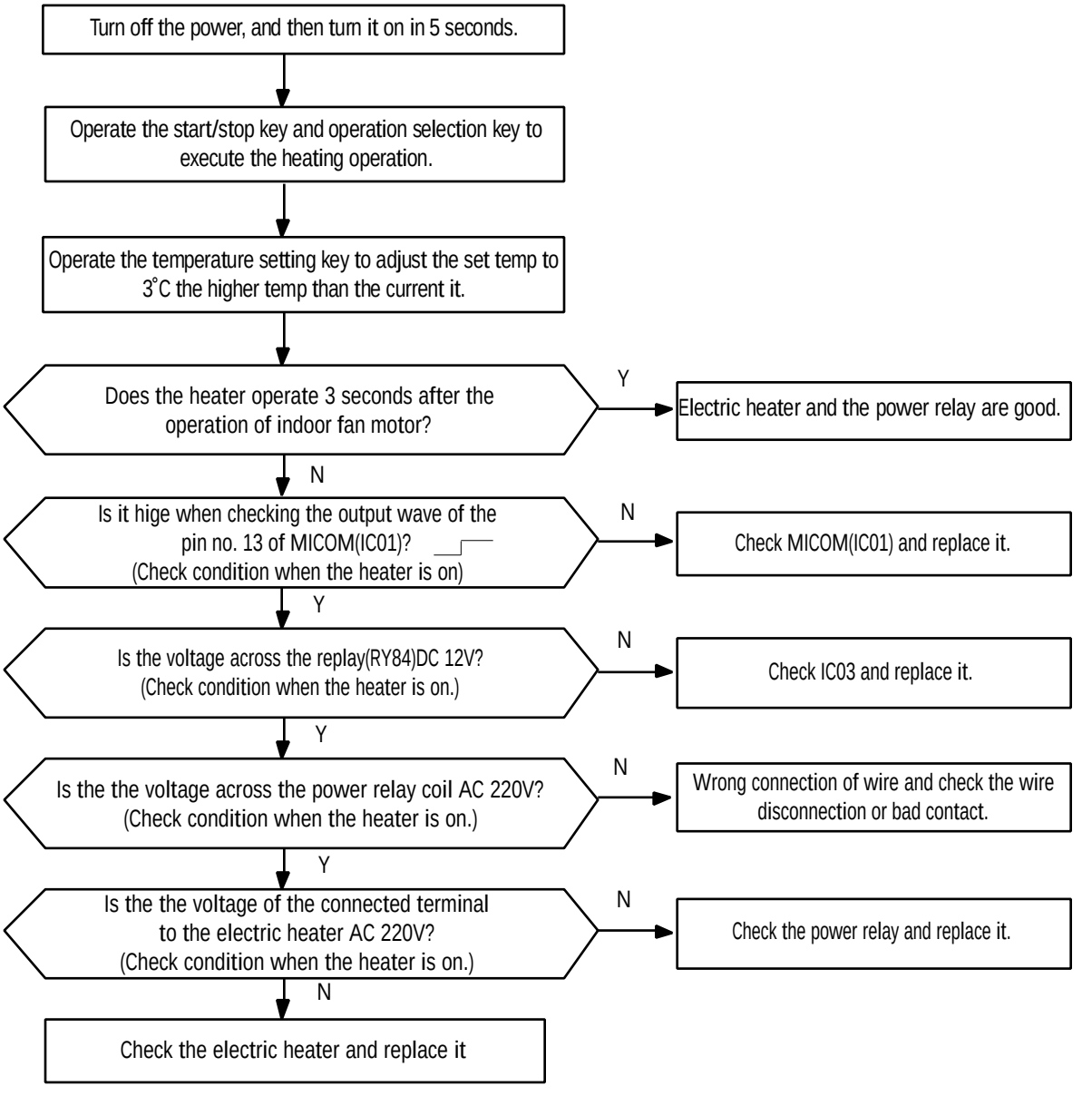

Turn off the power, and then turn it on in 5 seconds.
Is the display part on dose the door operate when pressing the start key?
Y
Normal operation of set.
N
Is the voltage of the power input part(CN71 red-white) AC 187~AC 253V?
N
Check the connection harness of indoor and replace.
Y
Is the secondary voltage of power transformer correct? blue-white:AC14~17V,red-red:AC4~5V black-white:AC14~17V
N
Check the power trancsfornmer and replace it.
Y
Is the output voltage of IC08, and IC09 normal? (IC08=12V, RIC09=5V)
N
Check the main PBC and replace it.
Y
Dose the remocon receive the singnal correctly?
N
Check the knob key.
N
Replace it due to the defact of main PCB.

5-3-2 When the electric heater does not Operate

1) The cause of trouble
- Open of the electric heater
- Open of the electric heater connection wire or bad contact
- Main PCB defect(RY84, IC03, MICOM)
- Open of manual reset type temperature fuse
- The electric heater driving power relay is defected

2) Check items
- Does the set temperture not adjust lower temperature than the current it?
- Is the power voltage correct?(187V-253V)
- Is the contact of the electic heater connection wire OK?
- Is the manual reset type temperature fuse closed?
- Is the contact of the wire connected to the power relay terminal for electric heater good?

3) Sequence of check


Turn off the power, and then turn it on in 5 seconds.
Operate the start/stop key and operation selection key to execute the heating operation.
Operate the temperature setting key to adjust the set temp to 3˚C the higher temp than the current it.
Does the heater operate 3 seconds after the operation of indoor fan motor?
Y
Electric heater and the power relay are good.
N
Is it hige when checking the output wave of the pin no. 13 of MICOM(IC01)?
(Check condition when the heater is on)
N
Check MICOM(IC01) and replace it.
Y
Is the voltage across the replay(RY84)DC 12V?
(Check condition when the heater is on.)
N
Check IC03 and replace it.
Y
Is the the voltage across the power relay coil AC 220V?
(Check condition when the heater is on.)
N
Wrong connection of wire and check the wire disconnection or bad contact.
Y
Is the the voltage of the connected terminal to the electric heater AC 220V?
(Check condition when the heater is on.)
N
Check the power relay and replace it.
N
Check the electric heater and replace it

5-3-3 When the left and right adjusting plate Does not Operate

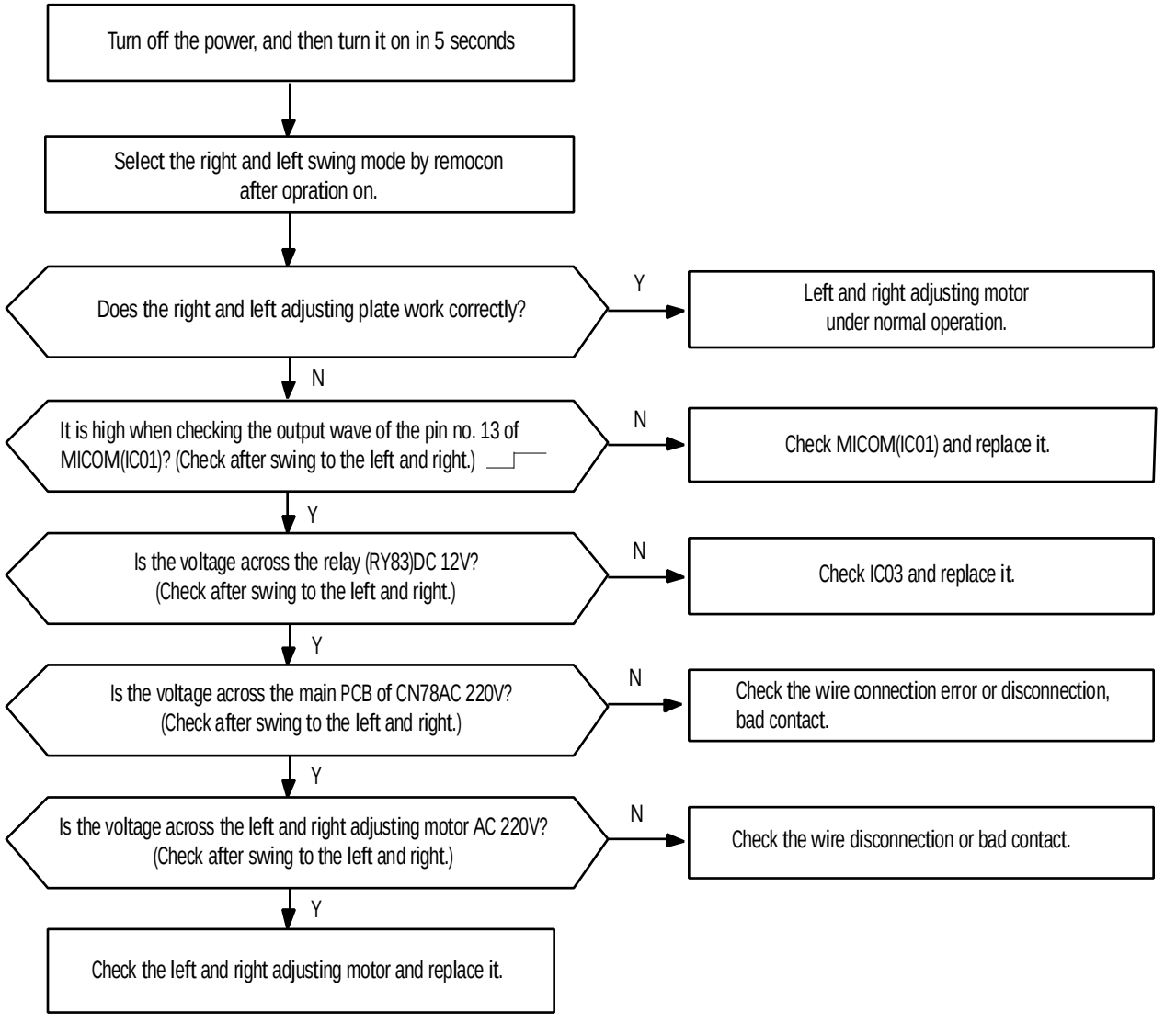
1) Trouble cause

Disconnection, wrong connection or bad contact of connected wire to the left and right adjusting motor.
Left and right adjusting motor defect.
Main PCB defect(RY83,IC03, MICOM)

2) Check items

Is the wire connecting the main PCB to the left and right adjusting motor good?

3) Sequence of check


Turn off the power, and then turn it on in 5 seconds
Select the right and left swing mode by remocon after opration on.
Does the right and left adjusting plate work correctly?
Y
Left and right adjusting motor under normal operation.
N
It is high when checking the output wave of the pin no. 13 of MICOM(IC01)? (Check after swing to the left and right.)
N
Check MICOM(IC01) and replace it.
Y
Is the voltage across the relay (RY83)DC 12V? (Check after swing to the left and right.)
N
Check IC03 and replace it.
Y
Is the voltage across the main PCB of CN78AC 220V? (Check after swing to the left and right.)
N
Check the wire connection error or disconnection, bad contact.
Y
Is the voltage across the left and right adjusting motor AC 220V? (Check after swing to the left and right.)
N
Check the wire disconnection or bad contact.
Y
Check the left and right adjusting motor and replace it.

5-3-4 When the remocon does not Operate

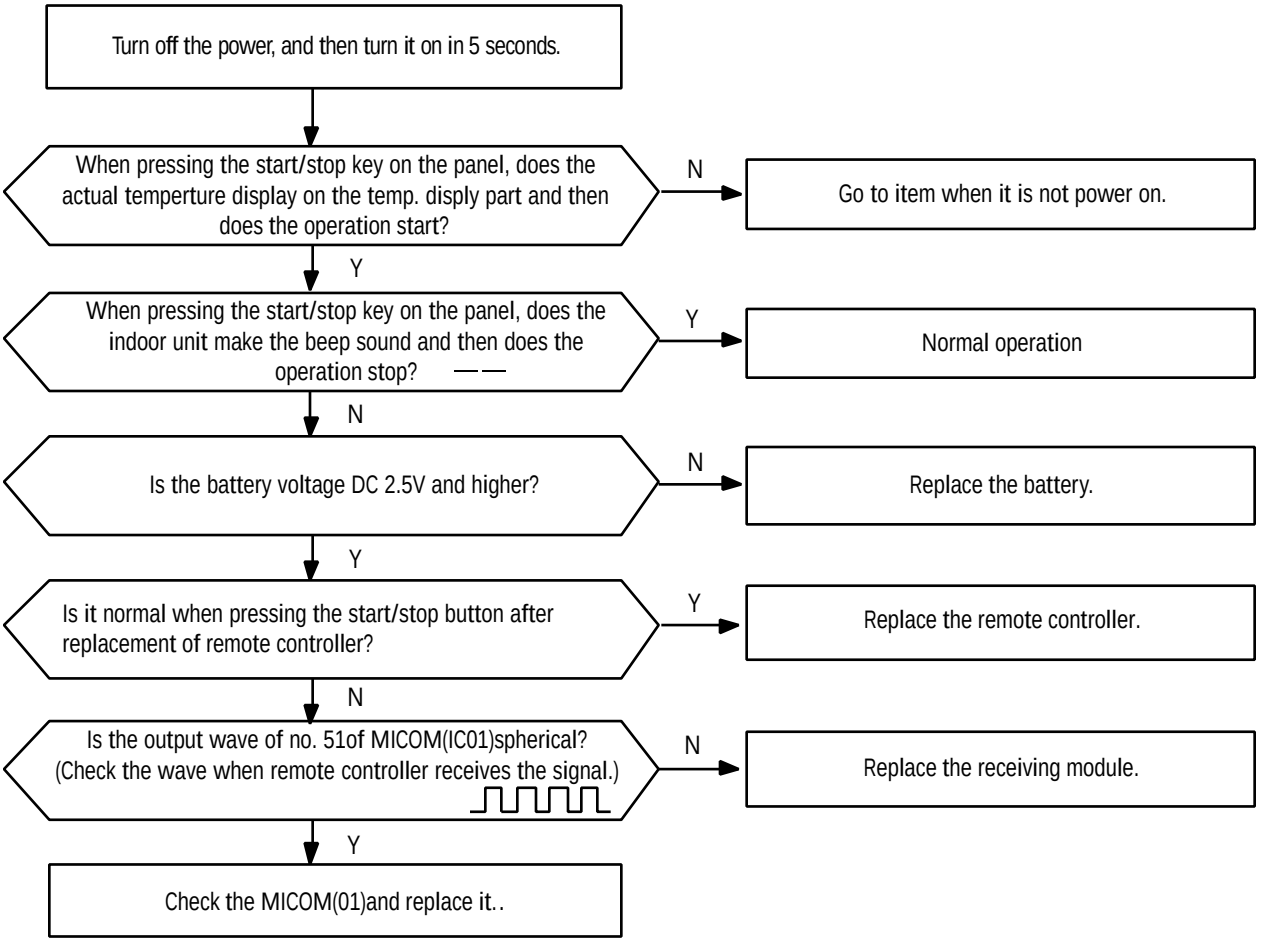
1) Trouble case

① When the voltage of the battery for remote-controller is low.
② The receiving mode of panel PCB remote-controller is bad.

2) Check items

① The beep sounds when the set receives the signal of remote-controller.

3) Check sequence


Turn off the power, and then turn it on in 5 seconds.
When pressing the start/stop key on the panel, does the actual temperture display on the temp. disply part and then does the operation start?
N
Go to item when it is not power on.
Y
When pressing the start/stop key on the panel, does the indoor unit make the beep sound and then does the operation stop?
Y
Normal operation
N
Is the battery voltage DC 2.5V and higher?
N
Replace the battery.
Y
Is it normal when pressing the start/stop button after replacement of remote controller?
Y
Replace the remote controller.
N
Is the output wave of no. 51of MICOM(IC01)spherical? (Check the wave when remote controller receives the signal.)
N
Replace the receiving module.
Y
Check the MICOM(01)and replace it..

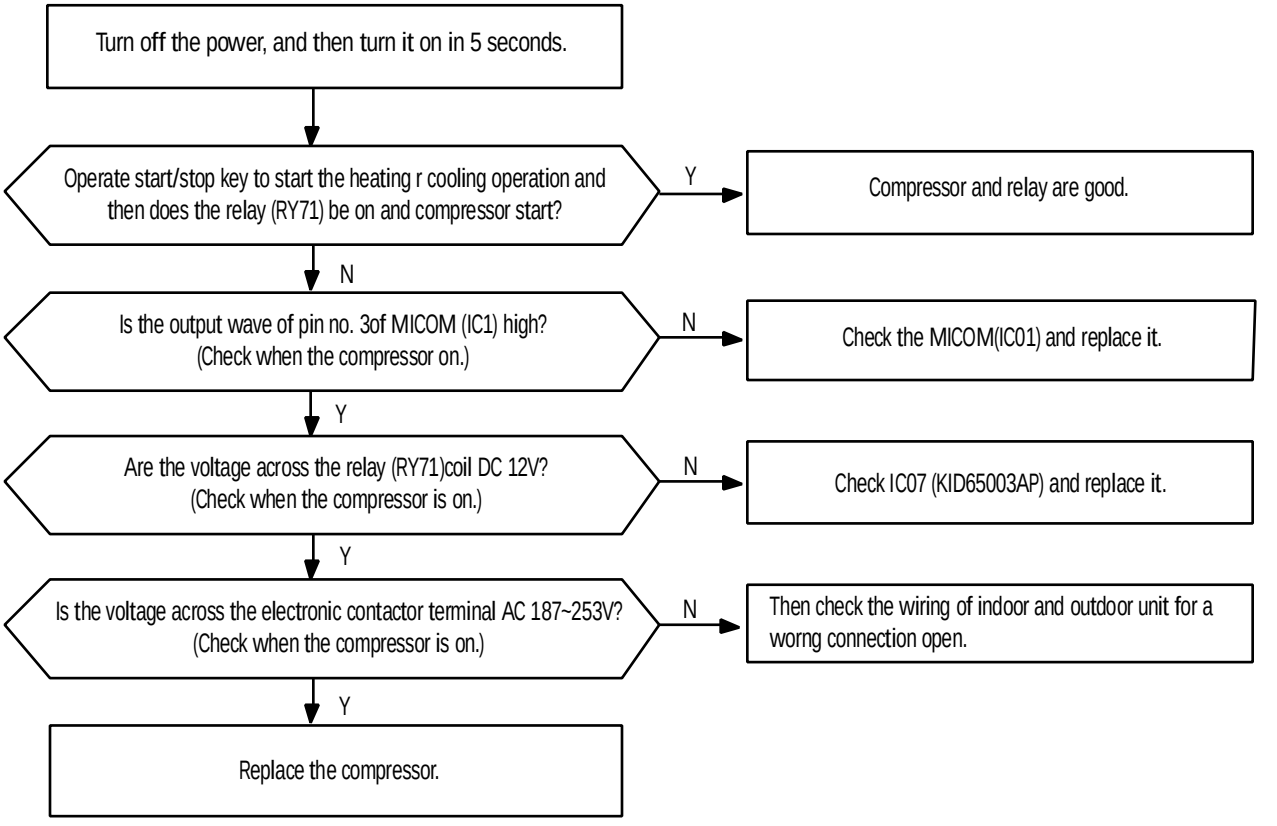
5-3-5 When the compressor Does not Operate

1) Trouble cause

① When the power voltage is out of the operating range or power cable contact is bad.
② Wrong connection or bad contact of wire. (indoor to outdoor)
③ Main PCB defect(RY71, IC02, MICOM)

2) Check items

① Is the power voltage normal? (AC187~AC253V)
② Check the wireing of the outdoor and indoor unite for a wrong connection or poor contact.
③ Is the compressor waiting for 3 minutes?
④ Is the set temperature not set iower than the current temperature during the cooling operation?
⑤ Is the set temperature not set iower than the current temperature during the cooling operation?


Turn off the power, and then turn it on in 5 seconds.
Operate start/stop key to start the heating r cooling operation and then does the relay (RY71) be on and compressor start?
Y
Compressor and relay are good.
N
Is the output wave of pin no. 3of MICOM (IC1) high? (Check when the compressor on.)
N
Check the MICOM(IC01) and replace it.
Y
Are the voltage across the relay (RY71)coil DC 12V? (Check when the compressor is on.)
N
Check IC07 (KID65003AP) and replace it.
Y
Is the voltage across the electronic contactor terminal AC 187~253V? (Check when the compressor is on.)
N
Then check the wiring of indoor and outdoor unit for a worng connection open.
Y
Replace the compressor.

5-3-6 When the up and down swing motor does not operate

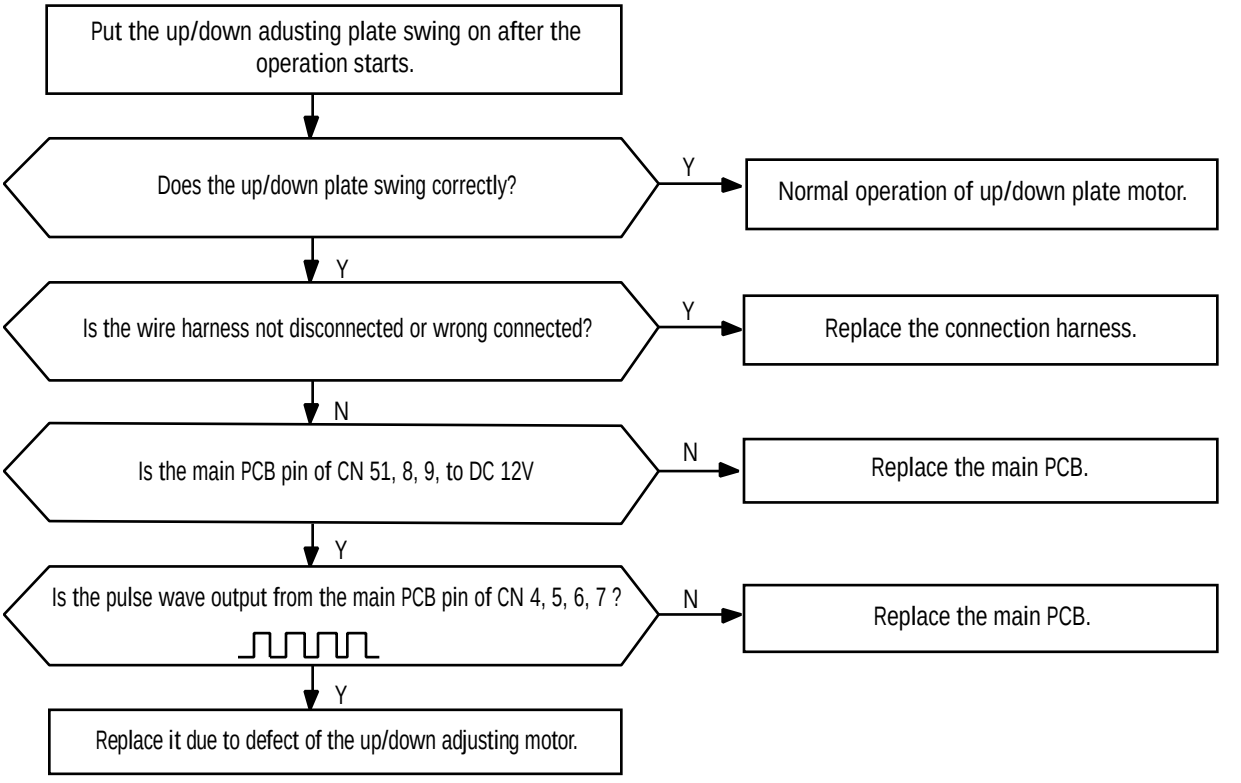
1) Trouble cause

① The disconnection, the wrong connection or the bad contact of the up / down swing motor connection wire harness.
② Defect by the structural interference.
③ Defect of the stepping motor.
④ Main PCB defect.

2) Check items

① Is the connection of wire harness for the up and down swing motor good?
② Is the normal out wave made durning the motor operation at the main PCB?

3)Sequence of check


Put the up/down adusting plate swing on after the operation starts.
Does the up/down plate swing correctly?
Y
Normal operation of up/down plate motor.
Y
Is the wire harness not disconnected or wrong connected?
Y
Replace the connection harness.
N
Is the main PCB pin of CN 51, 8, 9, to DC 12V
N
Replace the main PCB.
Y
Is the pulse wave output from the main PCB pin of CN 4, 5, 6, 7 ?
N
Replace the main PCB.
Y
Replace it due to defect of the up/down adjusting motor.

5-3-7 When the indoor fan motor does not operate

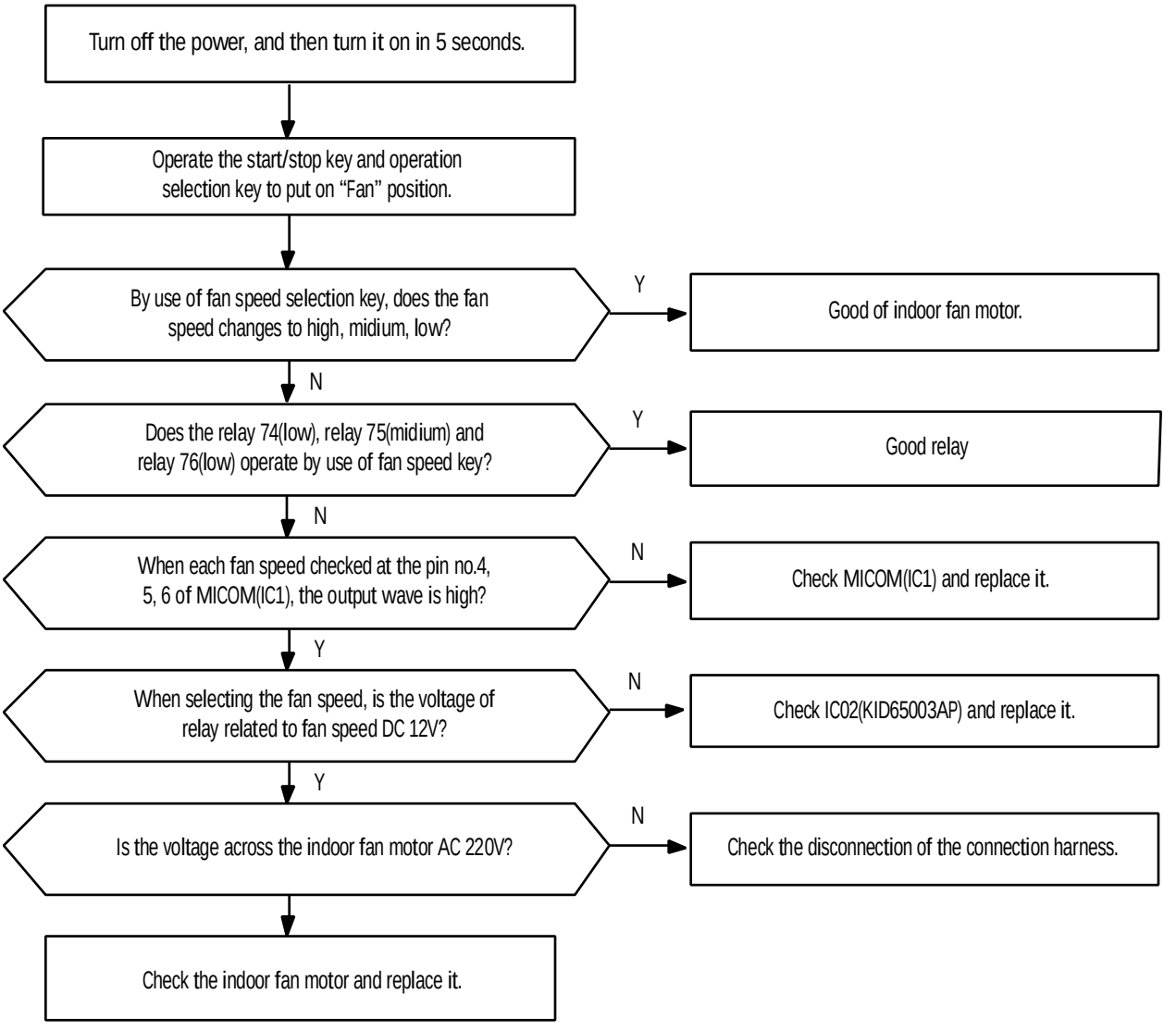
1) Trouble cause

① When the power voltage is out of the operating range or bad contact of power cable.
② The motor starting condenser has malfunction in defect of contact.
③ Disconnection or short of motor.
④ Disconnection or bad contact of connection wire harness.
⑤ Main PCB defect: Relay(RY74~RY76) defect.

2) Check items

① Is the power voltage correct?(AC 187V ~ AC 253V)
② Is the wire harness connection of motor good?
③ Is the contact of starting condenser trerminal of fan motor good?
④ Is the resistance of relay coil 720Ω

3) Sequence of check

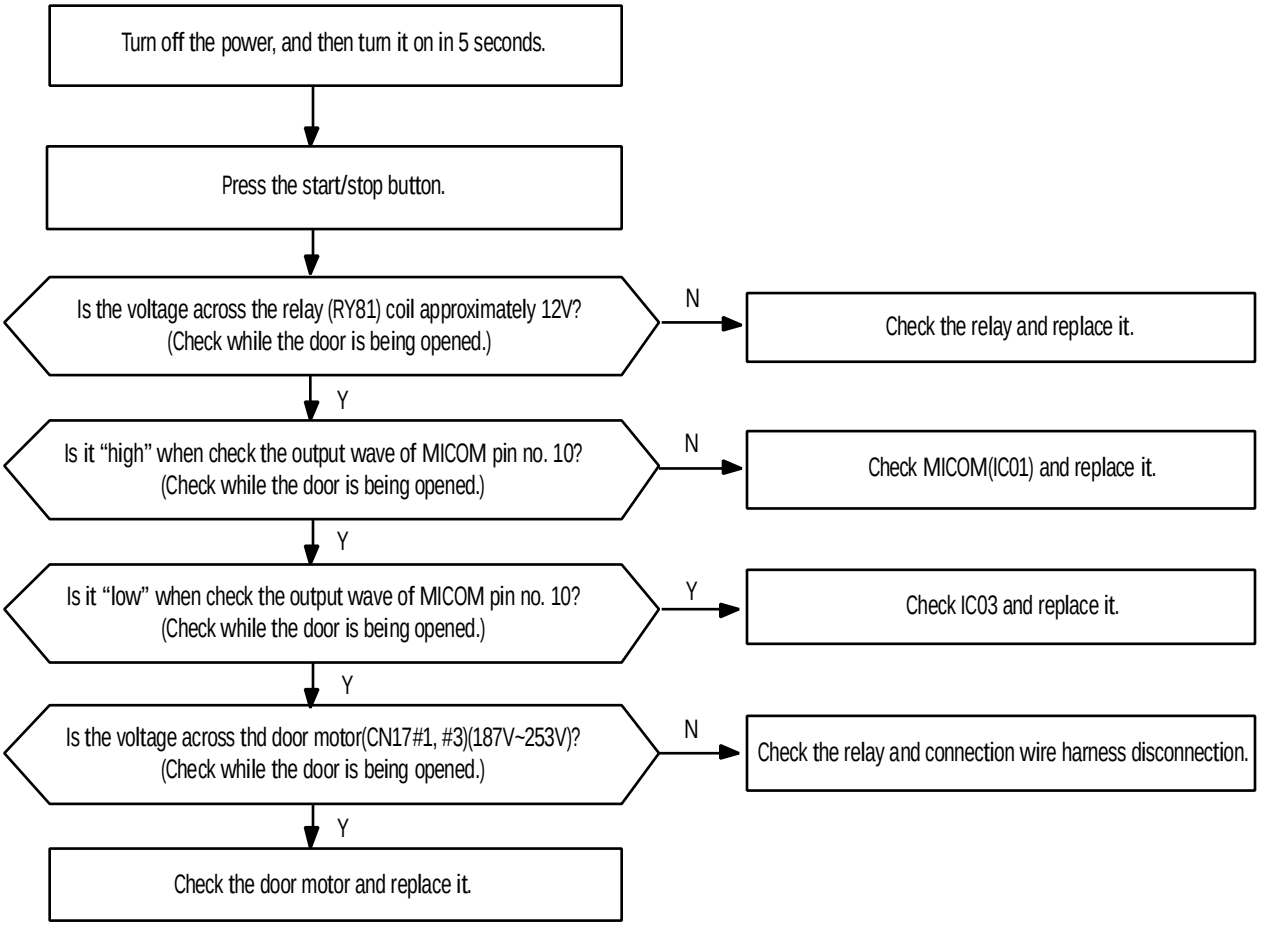

Turn off the power, and then turn it on in 5 seconds.
Operate the start/stop key and operation selection key to put on "Fan" position.
By use of fan speed selection key, does the fan speed changes to high, midium, low?
Y
Good of indoor fan motor.
N
Does the relay 74(low), relay 75(midium) and relay 76(low) operate by use of fan speed key?
Y
Good relay
N
When each fan speed checked at the pin no.4, 5, 6 of MICOM(IC1), the output wave is high?
N
Check MICOM(IC1) and replace it.
Y
When selecting the fan speed, is the voltage of relay related to fan speed DC 12V?
N
Check IC02(KID65003AP) and replace it.
Y
Is the voltage across the indoor fan motor AC 220V?
N
Check the disconnection of the connection harness.
Check the indoor fan motor and replace it.

5-3-8 When the auto shutter does not operate("E2" error mode)

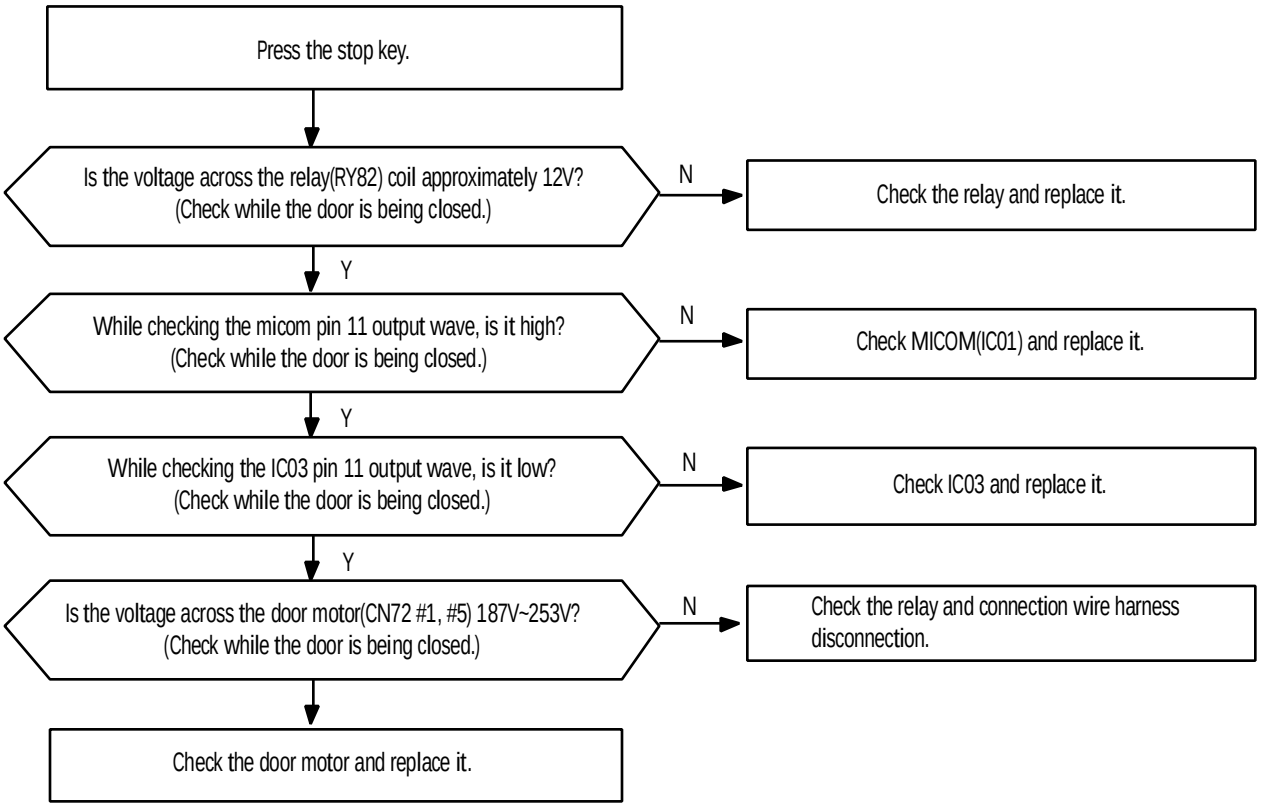
1) Trouble cause
   ① Disconnection of the motor harness wire or bad contact.
   ② Disconnection or bad contact of sensor PCB connection harness.
   ③ Sensor PCB defect.
   ④ Main PCB defect: CN02, RY79, RY80 defect.
   ⑤ Defect by the structural interference.
   ⑥ Main PCB defect.

2) Check items
   ① Is the power voltage normal?(AC 187V ~ AC253V)
   ② Is the shutter motor connector(CN77) good?
   ③ Is the sensor PCB connection harness good?
   ④ Is the resistance of relay RY78, RY80 400l?

3) Sequence of check
   ① In operating(Opening the door)


Turn off the power, and then turn it on in 5 seconds.
Press the start/stop button.
Is the voltage across the relay (RY81) coil approximately 12V?
(Check while the door is being opened.)
N
Check the relay and replace it.
Y
Is it "high" when check the output wave of MICOM pin no. 10?
(Check while the door is being opened.)
N
Check MICOM(IC01) and replace it.
Y
Is it "low" when check the output wave of MICOM pin no. 10?
(Check while the door is being opened.)
Y
Check IC03 and replace it.
Y
Is the voltage across thd door motor(CN17#1, #3)(187V~253V)?
(Check while the door is being opened.)
N
Check the relay and connection wire harness disconnection.
Y
Check the door motor and replace it.

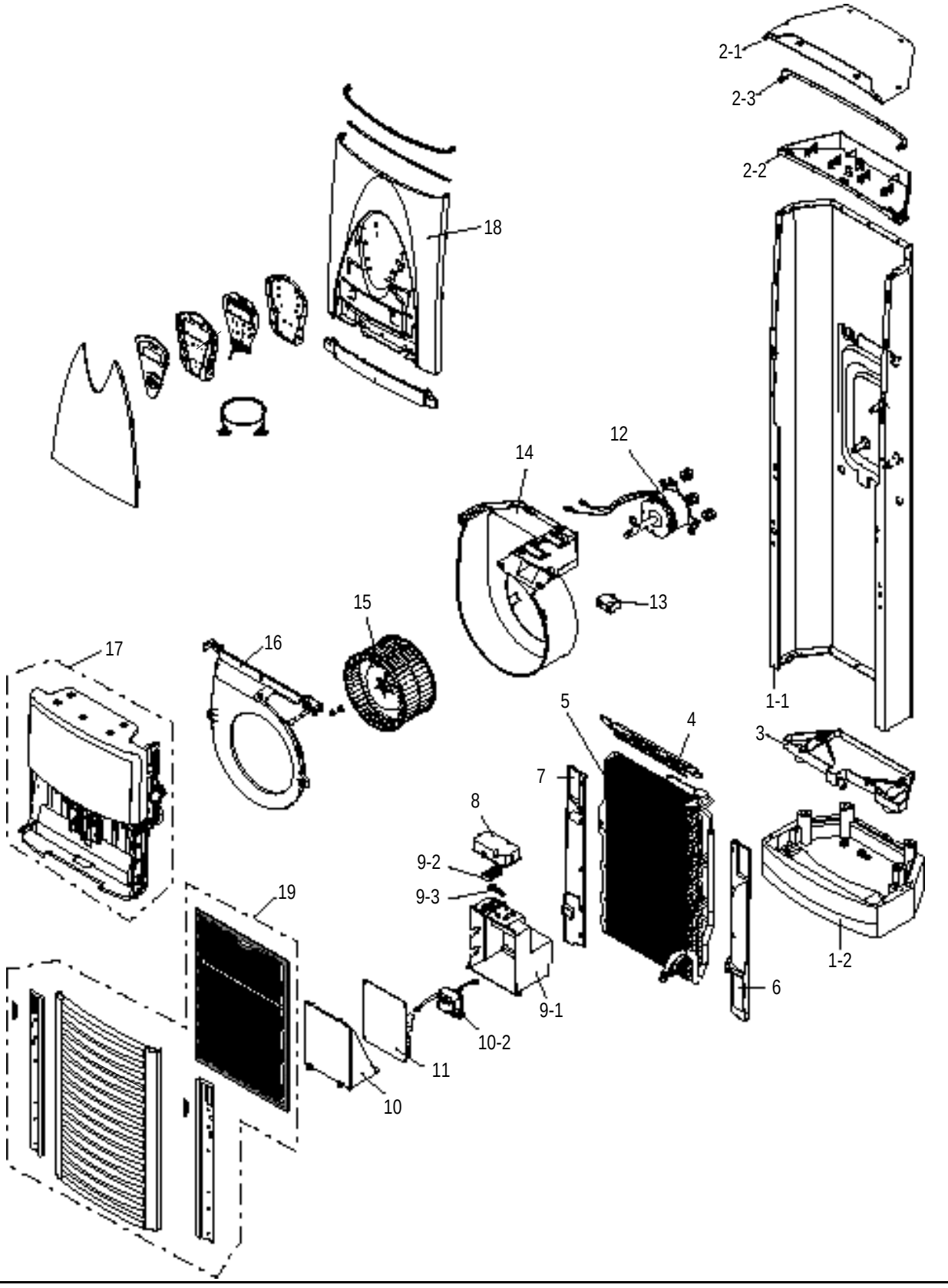
② In operating stop[(closing the door)


Press the stop key.
Is the voltage across the relay(RY82) coil approximately 12V?
(Check while the door is being closed.)
N
Check the relay and replace it.
Y
While checking the micom pin 11 output wave, is it high?
(Check while the door is being closed.)
N
Check MICOM(IC01) and replace it.
Y
While checking the IC03 pin 11 output wave, is it low?
(Check while the door is being closed.)
N
Check IC03 and replace it.
Y
Is the voltage across the door motor(CN72 #1, #5) 187V~253V?
(Check while the door is being closed.)
N
Check the relay and connection wire harness disconnection.
Check the door motor and replace it.

- The door motor is operated by the start/stop key only and when the start/stop signal is given, the function of opening or clossing door is detected by the photo sensor installed at the shutter PCB.
- If the door open is not operate in 20 seconds after input of start/stop key, “E2” error mode occurs.

6. Exploded Views and Parts List

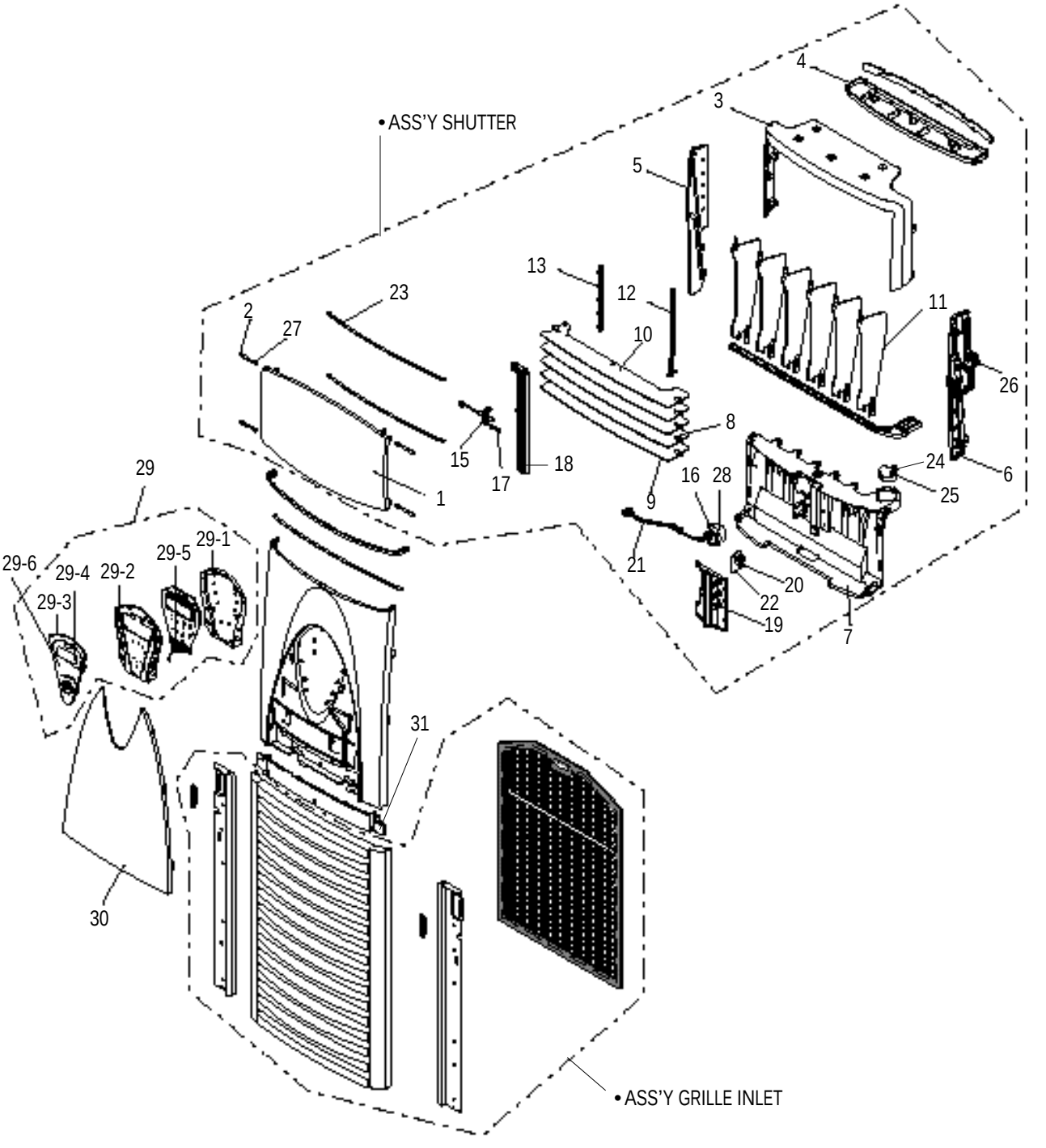
6-1 Indoor Unit



■ Parts List

No.	CODE NO	Description	Specification	Q'TY		
				APH180HD	APH180ED	APH180CD
1	DB90-10677A	ASS'Y-CABINET	ASS'Y	1	1	1
1-1	DB90-10655A	ASS'Y-CABI IN	SC-97470T	1	1	1
1-2	DB64-50147A	DIE-BOTTOM	HIPS, IVORY	1	1	1
2	DB90-40164B	ASS'Y COVER TOP	ASS'Y	1	1	1
2-1	DB63-10472A	COVER-TOP	HIPS, T2.2	1	1	1
2-2	DB63-10473A	COVER-TOP SUB	HIPS, T2.2	1	1	1
2-3	DB61-30588A	SUPPORT-COVER	SGCC-M, T1.2	1	1	1
3	DB92-70094C	ASS'Y PANEL DRAIN	HIPS, T2.0	1	1	1
4	DB90-90023A	ASSY-BRKT EVA UP	ASS'Y	1	1	1
5	DB96-40202A	ASSY-EVAP	ASS'Y	1	1	-
	DB96-00067A	ASSY-EVAP	ASS'Y	-	-	1
6	DB63-10497A	COVER-EVAP RH	ABS, T2.0	1	1	1
7	DB63-10498A	COVER-EVAP LF	ABS, T2.0	1	1	1
8	DB63-10502A	COVER-TERMINAL	HIPS, T2.2	1	1	1
9	DB93-00007A	ASS'Y-TERMINAL COVER	ASS'Y	1	1	-
	DB93-00078A	ASS'Y-TERMINAL COVER	ASS'Y	-	-	1
9-1	DB61-10198A	CASE-PCB	HIPS T2.2	1	1	1
9-2	DB65-40061A	TERMINAL BLOCK	5P FUSE TYPE	1	1	1
9-3	DB61-30618A	BRACKET-EARTH	SGCC-M, T1.2	1	1	1
9-4	DB39-20530A	CONNECTOR WIRE-POWER	5P	1	1	-
	DB39-20566A	CONNECTOR WIRE-POWER	3P	-	-	1
10	DB90-00030A	ASSY-CASE PCB	ASS'Y	-	1	1
10-1	3501-001107	RELAY-POWER	220V, 25A	-	1	-
10-2	DB26-10079A	TRANS-POWER	13.6, 230, 50	1	1	1
10-3	DB39-20568A	CONNECTOR WIRE-POWER	AWG#22/5			
10-4	DB39-20569A	CONNECTOR WIRE-H POWER	1.25mm^2	-	1	-
10-5	DB39-20571A	CONNECTOR WIRE-H IN	1.25mm^2	-	1	-
10-6	DB63-10501A	COVER-PCB	HIPS, T2.2	1	1	1
11	DB93-10620B	ASSY-PCB MAIN	PD-PH180HD	1	-	-
	DB93-10620C	ASSY-PCB MAIN	PD-PH180ED	-	1	-
	DB93-10620A	ASSY-PCB MAIN	PD-PH180CD	-	-	1
12	DB31-10158B	MOTOR-FAN IN	OSME-456	1	1	1
13	2501-000398	C-OIL	4uF, 450V	1	1	-
	2501-001069	C-OIL	4.5uF, 450V	-	-	1
14	DB67-40022C	DUCT-LOW	HIPS, BLK	1	1	1
15	DB67-50050D	BLOWER	ABS, 0D324	1	1	1
16	DB67-40024A	DUCT-UP	HIPS, BLK	1	1	1
17	DB92-30048B	ASSY-SHUTTER	ASS'Y	1	1	1
18	DB90-40171B	ASSY-COVER FRONT	ASS'Y	1	1	1
19	DB92-10343A	ASSY-GRILLE INLET	ASS;Y	1	1	1
20	DB90-40167A	ASSY-HOLDER	ABS	1	1	1
21	DB93-30052U	ASSY-REMOCON	ASS'Y	1	1	-
	DB93-30067X	ASSY-REMOCON	ASS'Y	-	-	1

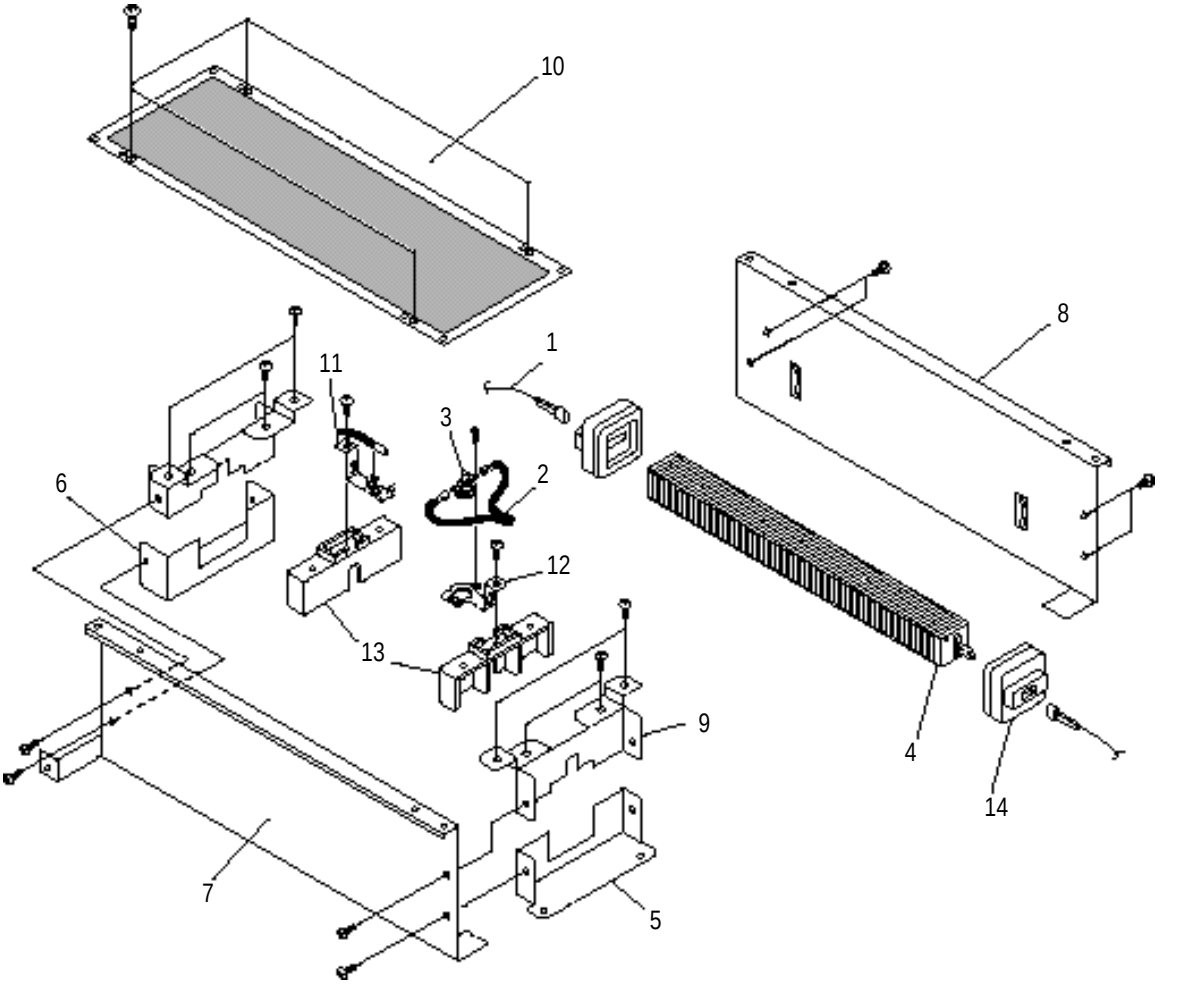
6-1-1 ASS'Y COVER FRONT



■ Parts List

No.	CODE NO	Description	Specification	Q'TY		
				APH180HD	APH180ED	APH180CD
•	DB92-30048F	ASS'Y SHUTTER	APH180HD, C-PROJECT	1	1	1
1	DB64-70089D	PANEL-SHUTTER	HIPS, T2.5, GRAY, VIRGIN, -, -	1	1	1
2	DB61-70058A	HINGE-RAIL	POM, ID 5.3, -, -	4	4	4
3	DB63-10477A	COVER-OUTLET	HIPS, T3.0, VIRGIN, GRAY, -	1	1	1
4	DB61-40279A	HOLDER-BLADE UP	HIPS, T2.5, BLACK, -	1	1	1
5	DB61-50109A	GUIDE-RAIL L	HIPS, T2.5, BLACK, -	1	1	1
6	DB61-50108A	GUIDE-RAIL R	HIPS, T2.0, BLACK, -	1	1	1
7	DB61-60124A	BODY-OUTLET	HIPS, T2.0, BLACK, -	1	1	1
8	DB66-30202A	BLADE-H LOW	HIPS, T3.0, -, -	1	1	1
9	DB66-30201A	BLADE-H MOTOR	HIPS, T3.0, -, -	1	1	1
10	DB66-30200A	BLADE-H	HIPS, T3.0, -, -	3	3	3
11	DB66-30199A	BLADE-V	HIPS, T3.0, BLACK, -	6	6	6
12	DB61-30593A	SUPPORTER-BLADE H	POM, T1.5, -, -, -	1	1	1
13	DB66-60030A	LINK-BLADE H	POM, 36, -, -, AP-431P, -	1	1	1
14	DB66-60029A	LINK-BLADE V	ABS, 66, -, -, AP-431P, -	1	1	1
15	DB66-60020A	LINK-SHUTTER	NYLON 66, -, -, -, AP-2037, -	1	1	1
16	DB66-70002A	GEAR-SHUTTER	-, -, -, -, -, -	1	1	1
17	DB61-70059A	HINGE-RACK	POM, ID 4.9, -, -	1	1	1
18	DB66-70028A	GEAR-RACK	ABS, -, -, -, AP-431P, -	1	1	1
19	DB61-50110A	GUIDE-RACK SILDE	POM, T2.5, BLACK, -	1	1	1
20	DB93-10552A	ASS'Y-PCB SUB(PHOTO)	AP-431P, 32*32	1	1	1
21	DB39-20528A	CONNECT WIRE-S-MOTOR	AWG#22/5, UL1007, 1000, -, -	1	1	1
22	DB39-20506A	CONNECT WIRE-SENSOR	AWG#24/9, UL1007, 1200, -, -	1	1	1
23	DB61-30478B	SUPPORTER-PANEL	SGCC-M, Z, T1.2, -, -, -	1	1	1
24	DB95-20065E	ASS'Y-MOTOR SWING	516RPM M2LA49ZR32, -	1	1	1
25	DB66-70001A	CAM-BLADE	POM, -, -, -	1	1	1
26	DB31-10113A	MOTOR-STEPPING	MP35	1	1	1
27	DB67-60027C	SPRING-SHUTTER	COIL, SWC, 0.6, 6.2, -, -	1	1	1
28	DB31-10112A	MOTOR-GEARD	0, -, 220V, 20mA, 60Hz, 5W, 14	1	1	1
29	DB93-40880A	ASS'Y-CONTROL PANEL	ASS'Y	1	-	-
	DB93-40880C	ASS'Y-CONTROL PANEL	ASS'Y	-	1	-
	DB93-40880B	ASS'Y-CONTROL PANEL	ASS'Y	-	-	1
29-1	DB63-10478A	COVER-WINDOW	HIPS, T2.0, BLACK	1	1	1
29-2	DB64-70090A	HOLDER WINDOW	HIPS	1	1	1
29-3	DB64-70099C	PANEL-CONTROL	ABS	1	1	1
29-4	DB64-70104B	PANEL-WINDOW LED	ABS	1	1	1
29-5	DB93-10550C	ASSY-PCB PANEL	ASS'Y	1	1	-
	DB93-10550B	ASSY-PCB PANEL	ASS'Y	-	-	1
29-6	DB64-40182C	INLAY-WINDOW	PC, 0.25	1	-	-
	DB64-40182E	INLAY-WINDOW	PC, 0.25	-	1	-
	DB64-40182D	INLAY-WINDOW	PC, 0.25	-	-	1
30	DB64-70107A	PANEL FRONT	HIPS, T2.0	1	-	-
	DB64-70107B	PANEL FRONT	HIPS, T2.0	-	1	1
	DB64-70107C	PANEL FRONT	HIPS, T2.0	-	-	1
31	DB63-10499A	COVER-MID	HIPS, T2.2	1	1	1
32	DB74-10085F	FILTER-PRE	T0.3, 403*655.3	1	1	1

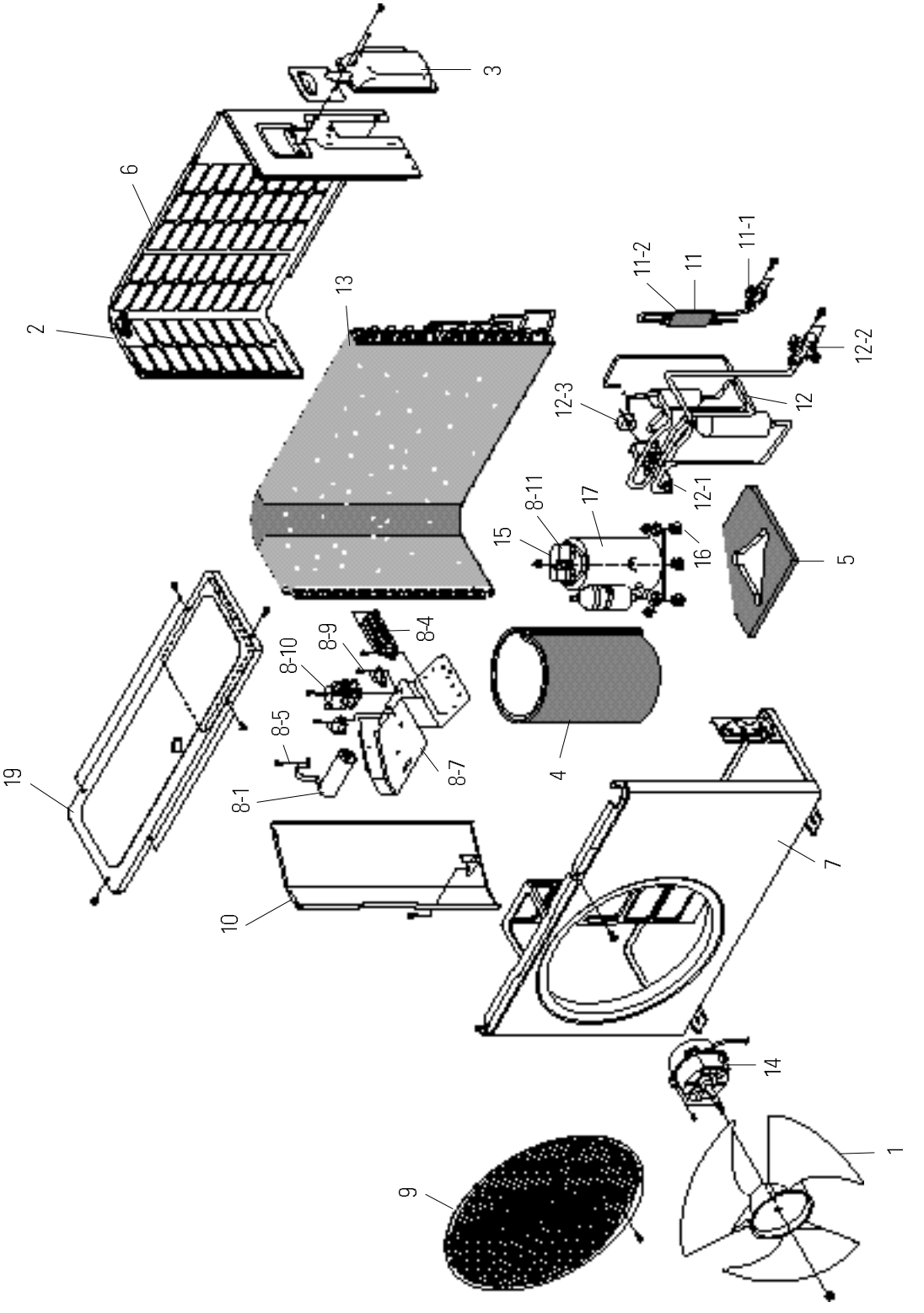
6-1-2 ASS'Y HEATER



■ Parts List

No	CODE NO	Description	Specification	Q'TY
				APH180ED
•	DB95-00010A	ASSY-HEATER	ASS'Y	1
1	DB39-20570A	CONNECTOR WIRE-H OUT	1.25mm^2, UL	1
2	DB39-20572A	CONNECTOR WIRE-THERMO	20 / 0.18, UL	1
3	DB47-20073A	THERMOSTAT-MANUAL	PBR380-90B	1
4	DB47-30009A	HEATER-ELECTRIC	PTC, 2.0*1000*L 185	1
5	DB61-00014A	HOLDER-HEATER RH BT	SGCC-M	1
6	DB61-00015A	HOLDER-HEATER LF BT	SGCC-M	1
7	DB61-00016A	HOLDER-HEATER FRONT	SGCC-M	1
8	DB61-00017A	HOLDER-HEATER BACK	SGCC-M	1
9	DB61-00018A	HOLDER-HEATER RH UP	SGCC-M	2
10	DB61-00020A	HOLDER-FILTER	STS304	1
11	DB61-30520A	BRACKET-THERMISTOR	SGCC-M	1
12	DB61-30521A	BRACKET-THERMOSTST	SGCC-M	1
13	DB61-40277A	HOLDER-SENSOR	PPS, T2.5	2
14	DB61-40290A	HOLDER-HEATER RUBBER	SILICON, T5	1

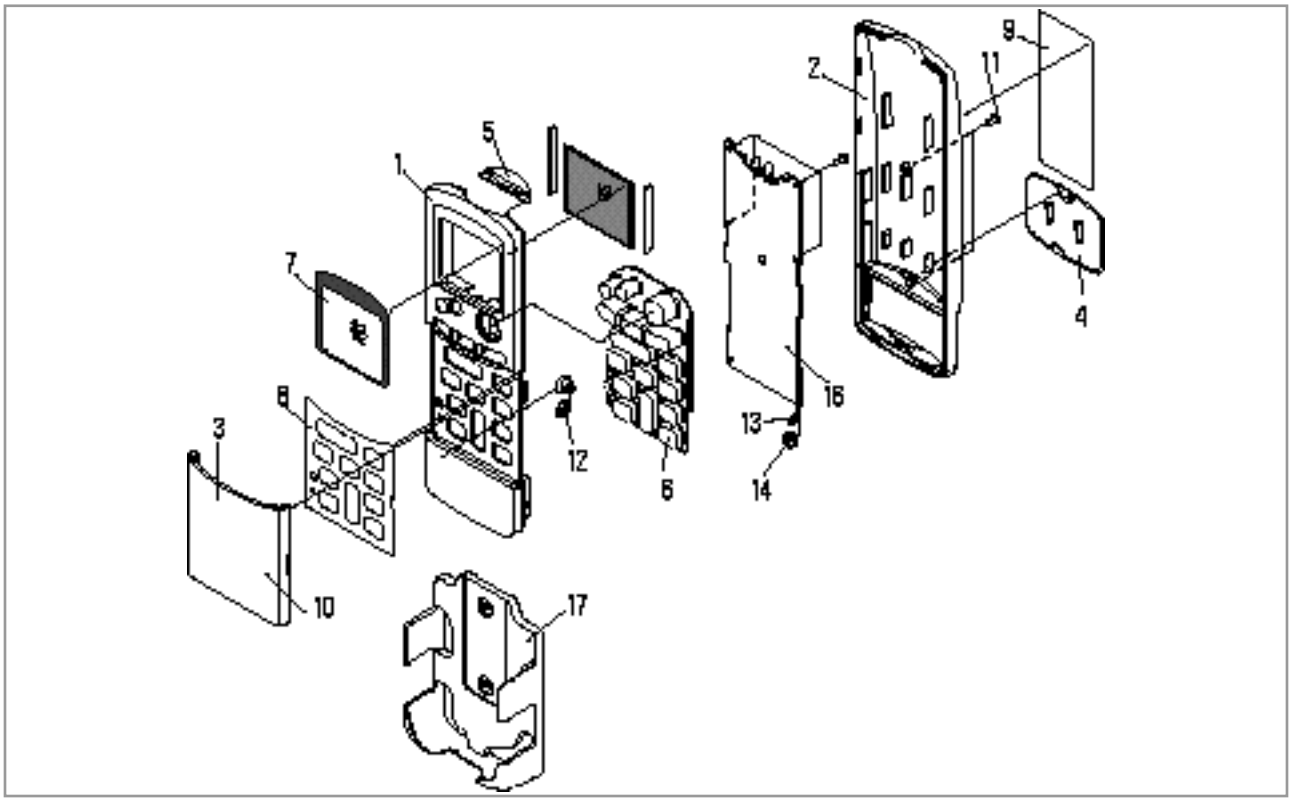
6-2 Outdoor unit



■ Parts List

No	CODE NO	Description	Specification	Q'TY	
				APH180HD/APH180ED	APH180CD
1	DB67-50063A	FAN-PROPELLER	AS+G / F20%, D405	1	1
2	DB67-90024A	HANDLE-CABI, LF	ABS, T2	1	1
3	DB67-90025B	HANDLE-COVER, RH	PP	1	1
4	DB72-00008A	CLOTH-SOUND-UP	10, -, -, APH180HD	1	-
	DB72-00043A	CLOTH-SOUND	APH180CD	-	1
5	DB72-50574B	CLOTH-COMP BOTTOM	10, -, -, APH180HD	1	1
6	DB90-00008A	ASSY-CABI-SIDE	APH180HD	1	1
7	DB90-50132A	ASSY-FRAME	AS-968, WELD	1	1
8	DB93-40879A	ASSY-CONTROL OUT	ASS'Y	1	-
	DB93-00039A	ASSY-CONTROL OUT	ASS'Y	-	1
8-1	2501-001121	C-OIL	45/2.5uF, 450V, BK, 63x95, 20.6	1	1
8-2	DB32-10042B	THERMISTOR-COND	103AT, 10K, 25, -, 3435K, -, 4	1	-
8-3	DB32-10042C	SENSOR-THERMISTOR	103AT, 10K, 25, APH180HD	1	-
8-4	DB65-40022E	TERMINAL-BLOCK	12345LN, XIA, 7P	1	-
	DB69-20117D	TERMINAL-BLOCK	PHENOL, T29, W39, L103, H29, U	-	1
8-5	DB69-60008A	BAND-CAPACITOR	SGCC-M, Z	1	1
8-6	DB73-30038A	BUSH-CONDENSER	NR	1	1
8-7	DB90-40170A	ASSY-CASE CONTROL	ASS'Y	1	1
8-8	DB93-50059E	ASS'Y-WIRE COMP	ASS'Y	1	1
8-9	DB95-90026D	ASSY-SPARK KILLER	ASS'Y	1	1
8-10	DB34-90054B	SWITCH-MAGNET	41NB21AGT, ASH1807BR-ZAM	1	-
	DB34-90057C	SWITCH-MAGNET	45CG20ALB697RT-, 220/240V20	-	1
8-11	DB47-20066C	OLP	150/69, 31.0, TI	1	1
9	DB94-00002A	ASSY-FAN-GUARD	APH180HD, -	1	1
10	DB94-50035B	ASSY-PARTITION	APH180HD, INSU+PARTITION	1	1
11	DB96-10714A	ASSY-TUBE CHECK	ASS'Y	1	-
11-1	DB62-40011J	VALVE-SERVICE	ASS'Y, L95, 3/8"	1	-
	DB62-00065A	VALVE-SERVICE	ASS'Y, L95, 1/4"	-	1
11-2	DB62-40047A	VALVE-CHECK	FUJIKOKI, 30KG/CM2G	1	-
12	DB96-10715A	ASSY-TUBE 4WAY	ASS'Y	1	-
12-1	DB62-40036A	VALVE-4WAY	3/8INCH, 30KG/CM2G	1	-
12-2	DB62-40074C	VALVE-SERVICE	C3771BD, 600L/H, 1/2", 30Kg/c	1	1
12-3	DB27-10004A	SOLENOIL-VALVE	SAGINOMIYA, 230V, -, APE-713	1	-
13	DB96-30349A	ASSY-COND	APH180HD, 2X20	1	-
	DB96-00061A	ASSY-COND	APH180CD	-	1
14	DB31-10119J	MOTOR-FAN OUT	ASS'Y	1	1
15	DB63-10165B	COVER-TERMINAL	NORYL, -, BLK	1	1
16	DB73-10004B	GROMMET-ISOLATOR	SLICON, APH180HD	1	1
17	DB95-10358A	ASSY-COMP	APH180YD, 48B180MV1E7	1	1
18	DB95-30013E	ASSY-HEATER-COMP	APH180HD, -	1	-
19	DB64-60137B	CABINET-UPPER	SECC-P, T0.8, T-P/J	1	1

6-3 Remote Control APH 180CD(DB93-30067X) APH180HD/180ED(DB93-30067Y)

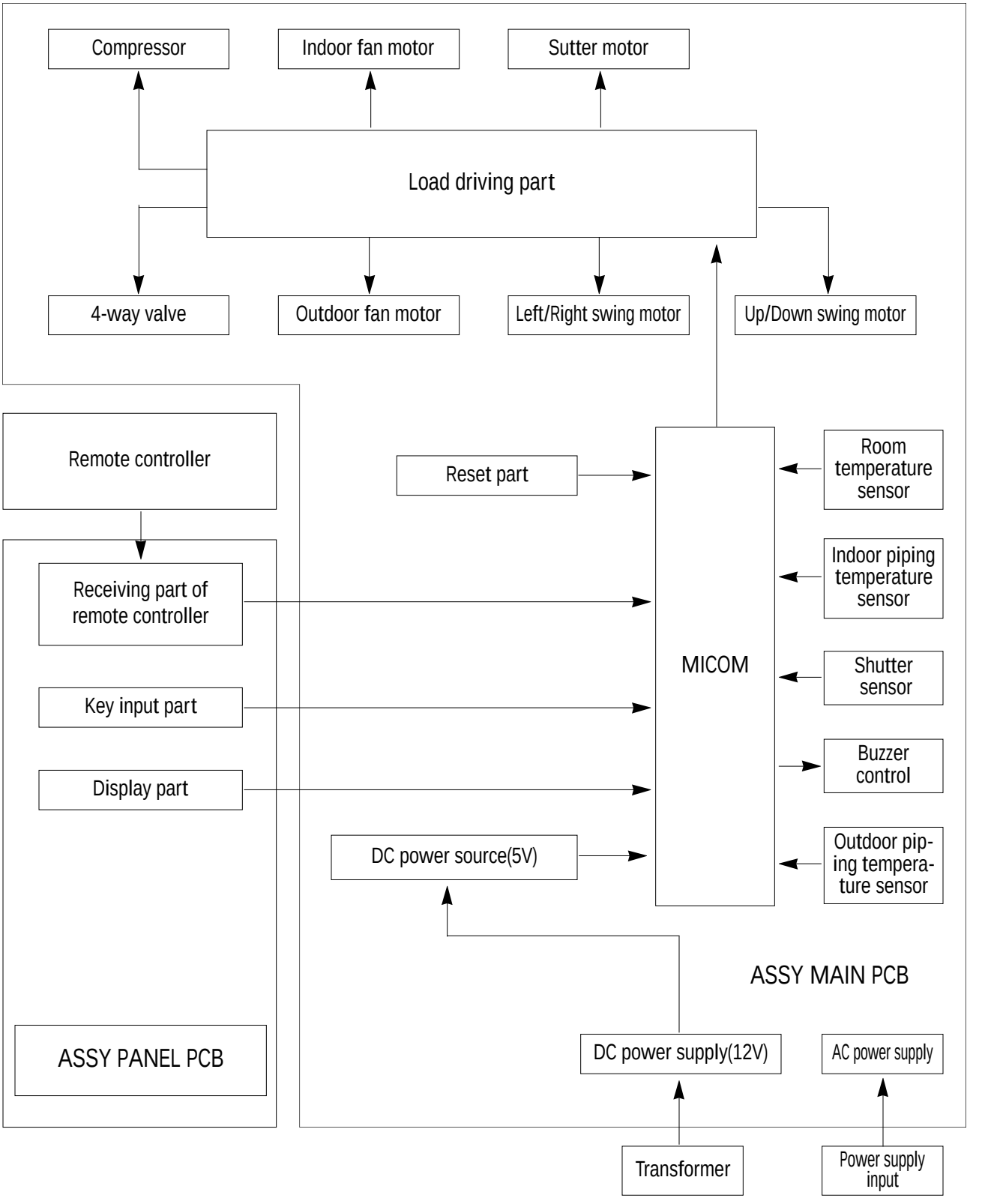


■ Parts List(Remocon)

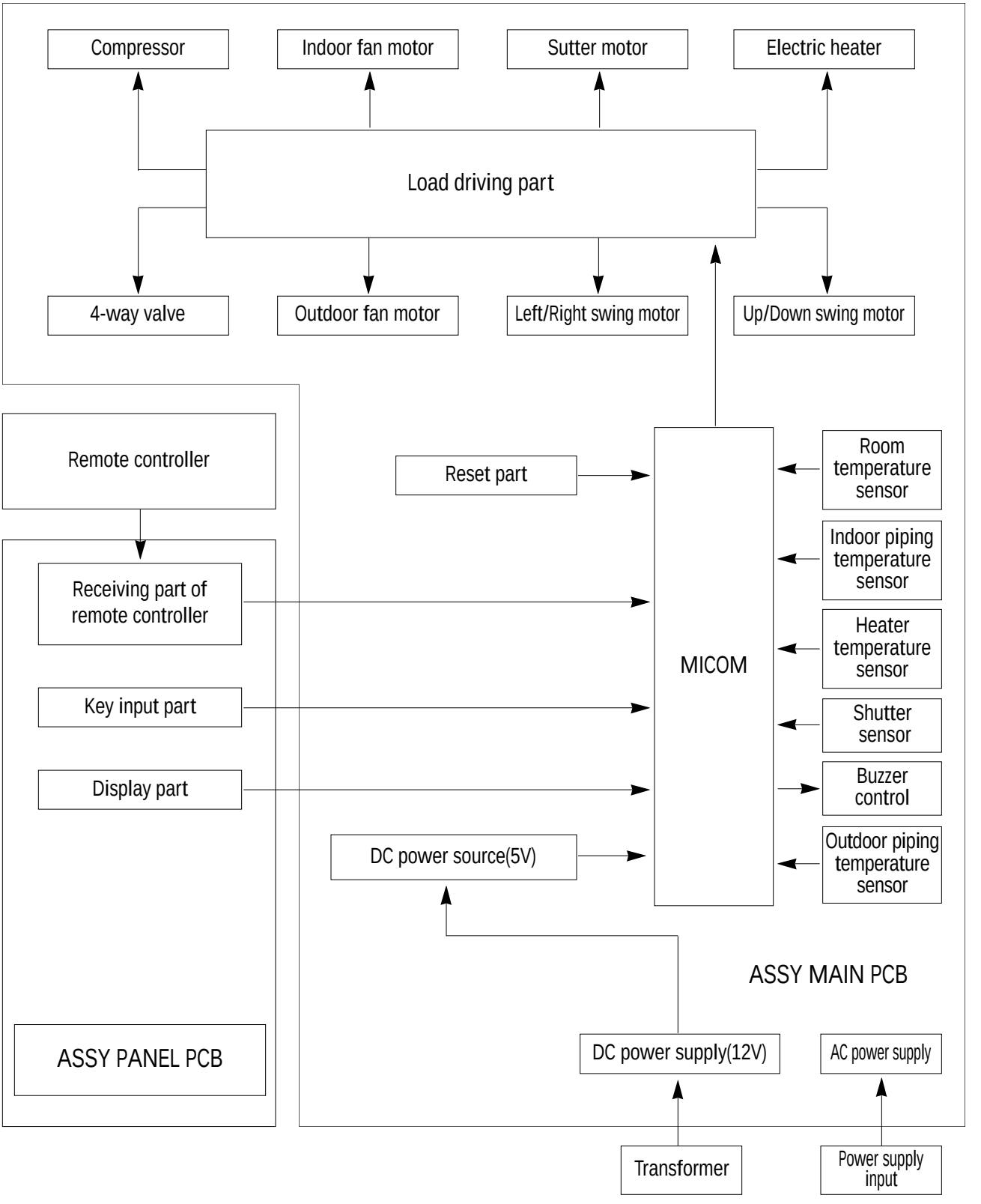
No	CODE NO	Description	Specification	Q'TY	Remark
	DB61-10144A	CASE UP	ABS	1	
1	DB61-10145A	CASE LOW	ABS	1	
	DB64-20054A	DOOR REMOCON	ABS	1	
2	DB63-10477A	COVER BATTERY	ABS	1	
3	DB74-10084A	FITER REMOCON	PC	1	
	DB73-20110C	RUBBER REMOCON	SILICON	1	
3-1	DB64-40167A	INLAY LCD	PC	1	
4	DB64-40166B	INLAY REMOCON	PC	1	
5-1	-	LABLE REMOCON	ART 90	1	
	-	LABLE DOOR	ART 90	1	
5-2	PH-M2	SCREW TAP	PH-M2	6	
5-3	DB67-60061A	SPRING BATTERY	SUS 304	1	
	DB67-60062A	SPRING BATTERY	SUS 304	1	
5-4	DB67-60063A	SPRING BATTERY	SUS 304	1	
6	90X250	PE BAG	90X250	1	
	DB93-40179C	ASS'Y PCB REMOCON		1	
7	DB90-40167A	HOLDER REMOCON	ABS	1	

7. Block Diagrams

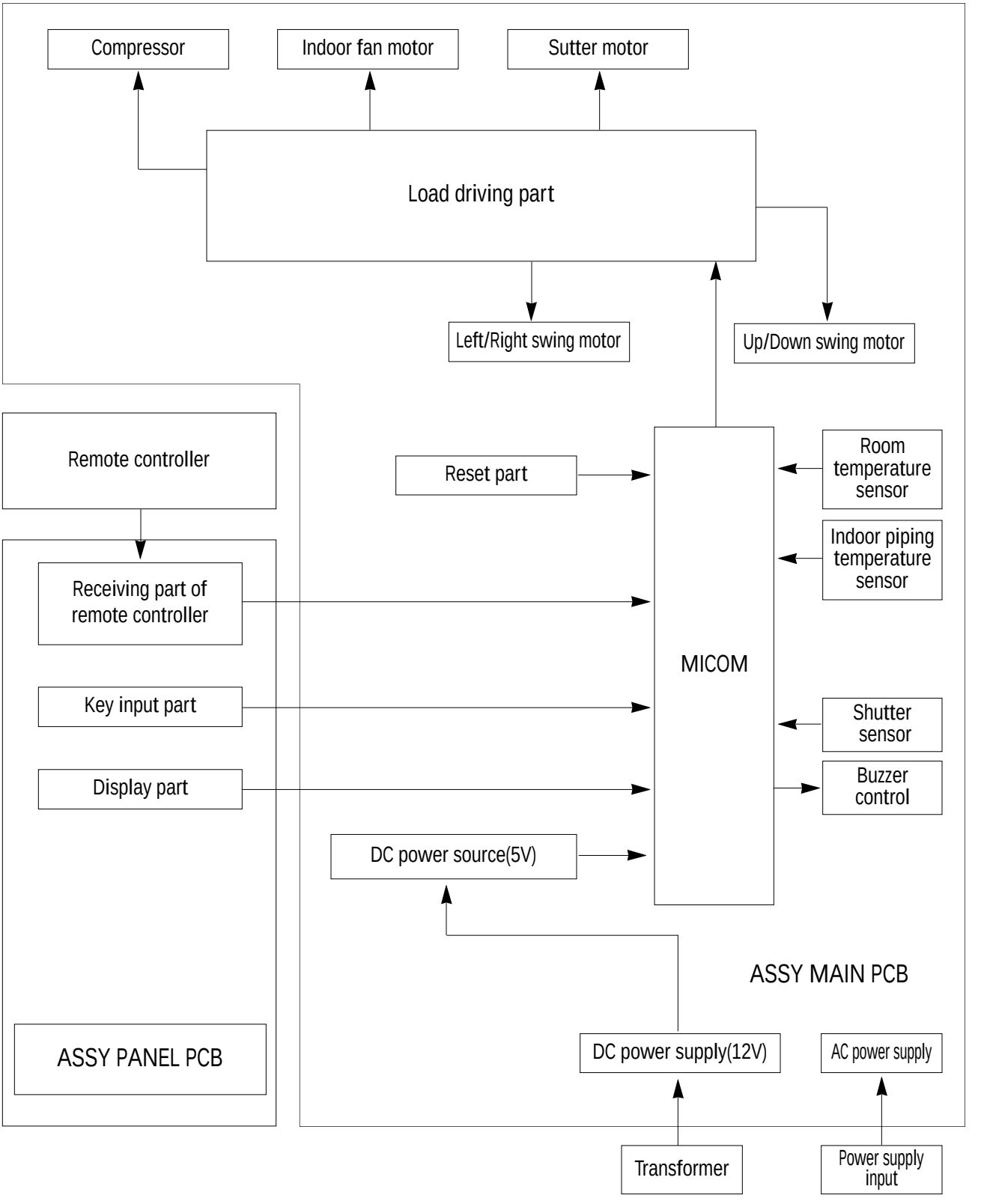
7-1 Micro Computer Block Diagram (APH180HD)



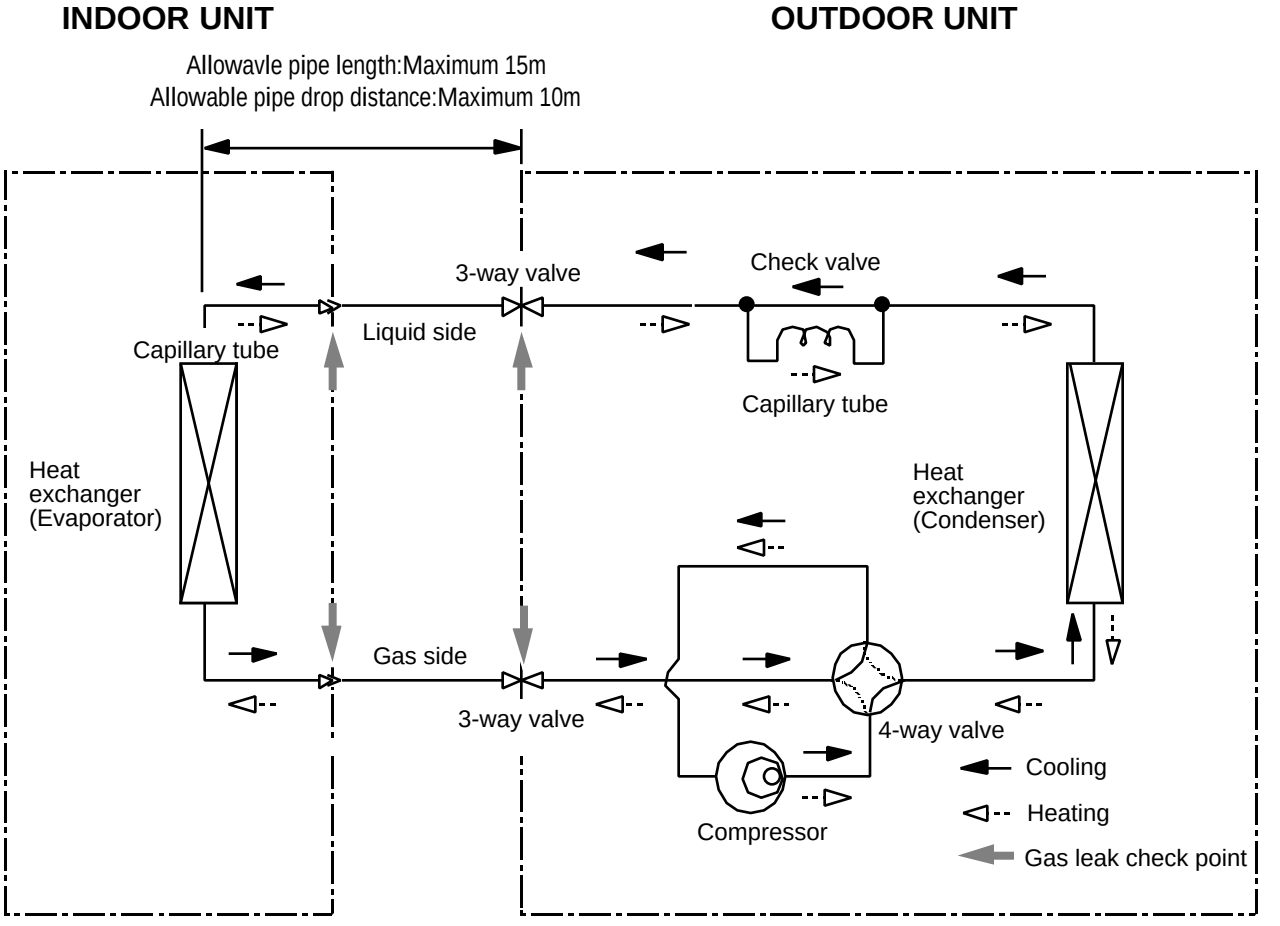
7-2 Micro Computer Block Diagram (APH180ED)



7-3 Micro Computer Block Diagram (APH180CD)



7-4 Refrigerating Cycle Block Diagram



* Amount of refilling per extension length of 1m;
When extending the pipe length by more than 5m, 40g of R-22 refrigerant should be refilled per extension length of 1m.

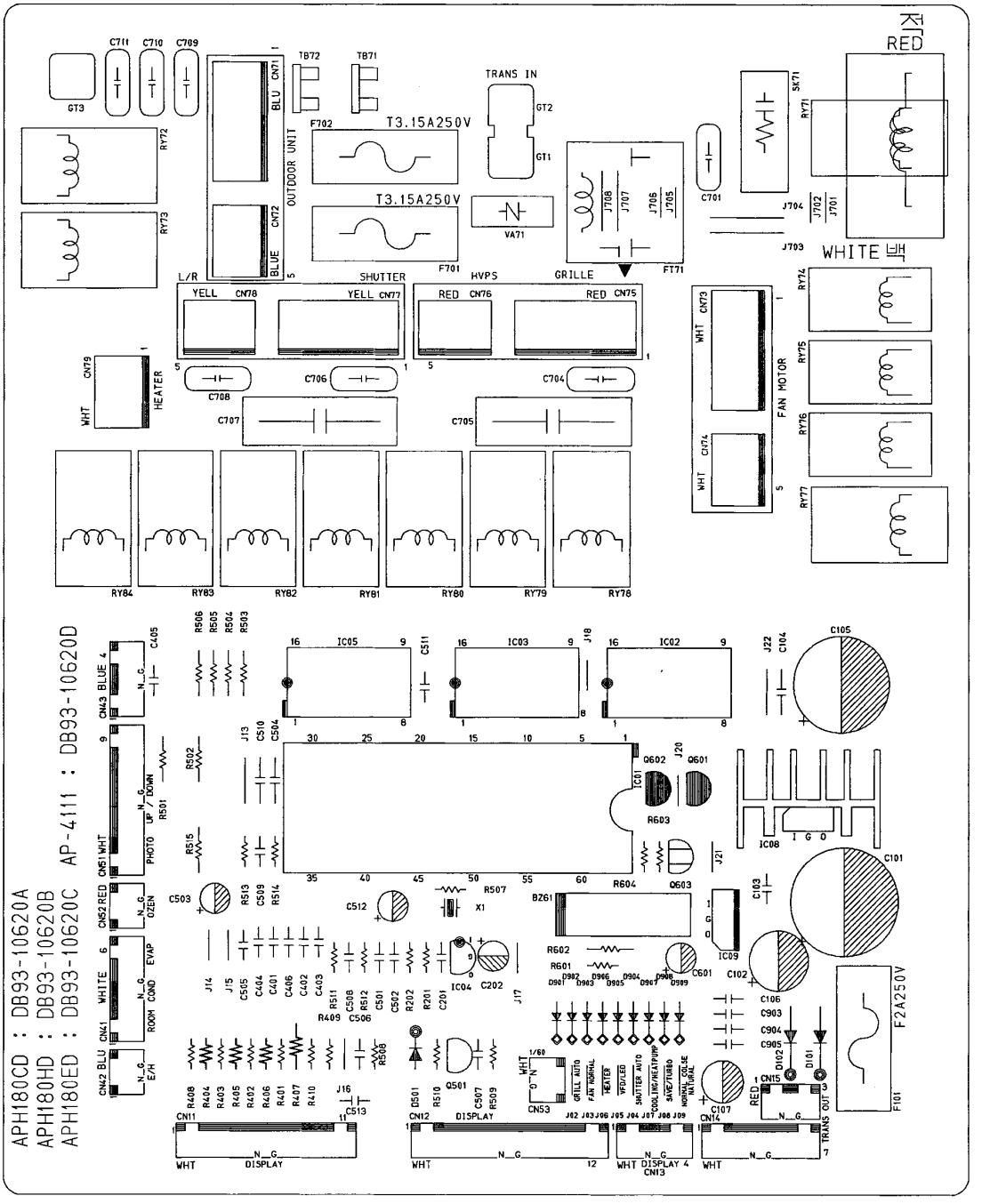
Refrigerating cycle temperature and pressure

Operating Condition		STD Pressure (kg/cm^2G) (GAS SIDE)	Piping Temp.		Use Temp. Condition (°C)			
			T1	T2	Indoor		Outdoor	
					DB	WB	DB	WB
Cooling	Standard	4.5~5.5	40~45	9~12	27	19	35	24
	Max over load	6.5~7.5	50~55	14~18	32	23	43	26
	Low temp	3~4	30~35	1~4	21	16	21	16
Heating	Standard	18.5~20.5	32~36	65~75	20	-	7	6
	Max over load	-	36~40	70~80	27	-	21	16
	Deice	-	28~32	40~45	20	-	2	1

MEMO

8. PCB Diagrams

8-1 Ass'y Main PCB



8-1-1 PART LIST (MAIN:APH180ED, CODE NO : DB93-10620C)

CODE NO	DESCRIPTION	SPECIFICATION	Q'TY	PART
-C101		35V 3300uF	1	
-C102		35V 470uF	1	
-C105		25V 2200uF	1	
-C107		25V 100uF	1	
-C202		50V luF	1	
-C503, C512		16V 47uF	2	
-C103, C104, C106, C201, C401-C406, C501, C502, C504, C505, C508-C511, C513		50V 104Z	19	
-C506, C507, C903-C905		50V 103Z	5	
-X1		4.0MHz	1	
-VA71		14D 471	1	
-SK71		ESQ-1201	1	
-C707		0.12uF AC600V	1	
-FT71		HP1-P16	1	
-Q501		KSC945	1	
-Q601, Q602		KSR1002	2	
-Q603		KSA708Y	1	
-IC04		KA7533	1	
-IC02, IC03, IC05		KID65003AP	3	
-IC01		C-PROJECT	1	
-IC08		KA7812	1	
-IC09		KA7805	1	
-RY71-RY73, RY77, RY81-RY84		UT205-12S	8	
-RY74-RY77		JQ1A-12V	3	
-F101		AC250V 2A 20mm	1	
-F701, F702		AC250V 3.15A 20mm	2	
-BZ61		CBE-2220BA	1	
-CN11		SMW250-11WHT	1	
-CN12		SMW250-12WHT	1	
-CN13		SMW250-04WHT	1	
-CN14		SMW250-07WHT	1	
-CN41		SMW250-06WHT	1	
-CN51		SMW250-09WHT	1	
-CN53		SMW250-02WHT	1	
-CN71		YW396-05AVBLU	1	
-CN72		YW396-03AVBLU	1	
-CN73		YW396-05AVWHT	1	
-CN74		YW396-03AVWHT	1	
-CN77		YW396-05AVYEL	1	
-CN78		YW396-03AVYEL	2	
-CN79		YW396-03AVWHT	1	
-D101, D102	DIODE FAST	1R5NH45	1	
-D501	DIODE RECT	D4G	4	
-D901-D904	DIODE S/W	1N4148	8	
-R409, R503-R506, R509, R604		10K 1/8	7	
-R502		10K 1/4	1	
-R201, R202, R510, R512, R603		1K 1/8	5	
-R513		2K 1/8	1	
-R514		3K 1/8	1	
-R602		1K 1/2	1	
-R507		1M 1/8	1	
-R501		470 1/2	1	
-R401-R403, R408, R410, R508, R515, R601		330 1/8	8	
-R404-R406		6.8K-F 1/8	3	
-R407		24K-F 1/4	1	
-C706, C708		472/400V	2	

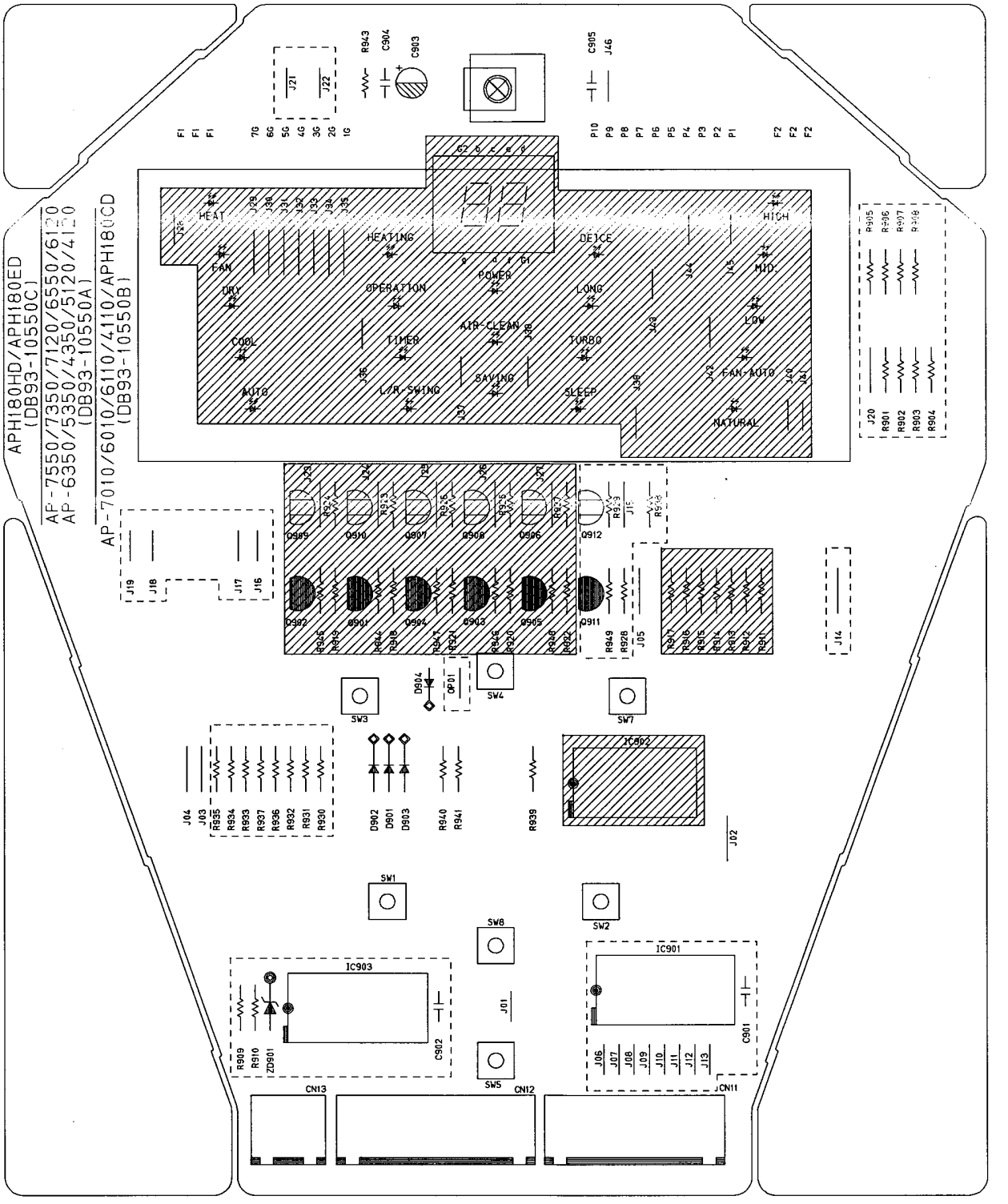
8-1-2 PART LIST (MAIN:APH180HD, CODE NO : DB93-10620B)

CODE NO	DESCRIPTION	SPECIFICATION	Q'TY	PART
-C101		35V 3300uF	1	
-C102		35V 470uF	1	
-C105		25V 2200uF	1	
-C107		25V 100uF	1	
-C202		50V IuF	1	
-C503, C512		16V 47uF	2	
-C103, C104, C106, C201, C401-C406, C501, C502, C504, C505, C508-C511, C513		50V 104Z	19	
-C506, C507, C903-C905		50V 103Z	5	
-X1		4.0MHz	1	
-VA71		14D 471	1	
-SK71		ESQ-1201	1	
-C707		0.12uF AC600V	1	
-FT71		HP1-P16	1	
-Q501		KSC945	1	
-Q601, Q602		KSR1002	2	
-Q603		KSA708Y	1	
-IC04		KA7533	1	
-IC02, IC03, IC05		KID65003AP	3	
-IC01		C-PROJECT	1	
-IC08		KA7812	1	
-IC09		KA7805	1	
-RY71-RY73, RY77, RY81-RY83		UT205-12S	7	
-RY74-RY77		JQ1A-12V	3	
-F101		AC250V 2A 20mm	1	
-F701, F702		AC250V 3.15A 20mm	2	
-BZ61		CBE-2220BA	1	
-CN11		SMW250-11WHT	1	
-CN12		SMW250-12WHT	1	
-CN13		SMW250-04WHT	1	
-CN14		SMW250-07WHT	1	
-CN41		SMW250-06WHT	1	
-CN51		SMW250-09WHT	1	
-CN53		SMW250-02WHT	1	
-CN71		YW396-05AVBLU	1	
-CN72		YW396-03AVBLU	1	
-CN73		YW396-05AVWHT	1	
-CN74		YW396-03AVWHT	1	
-CN77		YW396-05AVYEL	1	
-CN78		YW396-03AVYEL	2	
-D101, D102	DIODE FAST	1R5NH45	1	
-D501	DIODE RECT	D4G	4	
-D901-D904	DIODE S/W	1N4148	8	
-R409, R503-R506, R509, R604		10K 1/8	7	
-R502		10K 1/4	1	
-R201, R202, R510, R512, R603		1K 1/8	5	
-R513		2K 1/8	1	
-R514		3K 1/8	1	
-R602		1K 1/2	1	
-R507		1M 1/8	1	
-R501		470 1/2	1	
-R401-R403, R408, R410, R508, R515, R601		330 1/8	8	
-R404-R406		6.8K-F 1/8	3	
-R407		24K-F 1/4	1	
-C706, C708		472/400V	2	

8-1-3 PART LIST (MAIN:APH180CD, CODE NO : DB93-10620A)

CODE NO	DESCRIPTION	SPECIFICATION	Q'TY	PART
-C101		35V 3300uF	1	
-C102		35V 470uF	1	
-C105		25V 2200uF	1	
-C107		25V 100uF	1	
-C202		50V IuF	1	
-C503, C512		16V 47uF	2	
-C103, C104, C106, C201, C401-C406, C501, C502, C504, C505, C508-C511, C513		50V 104Z	19	
-C506, C507, C903-C905		50V 103Z	5	
-X1		4.0MHz	1	
-VA71		14D 471	1	
-SK71		ESQ-1201	1	
-C707		0.12uF AC600V	1	
-FT71		HP1-P16	1	
-Q501		KSC945	1	
-Q601, Q602		KSR1002	2	
-Q603		KSA708Y	1	
-IC04		KA7533	1	
-IC02, IC03, IC05		KID65003AP	3	
-IC01		C-PROJECT	1	
-IC08		KA7812	1	
-IC09		KA7805	1	
-RY71, RY77, RY81-RY83		UT205-12S	7	
-RY74-RY77		JQ1A-12V	3	
-F101		AC250V 2A 20mm	1	
-F701, F702		AC250V 3.15A 20mm	2	
-BZ61		CBE-2220BA	1	
-CN11		SMW250-11WHT	1	
-CN12		SMW250-12WHT	1	
-CN13		SMW250-04WHT	1	
-CN14		SMW250-07WHT	1	
-CN41		SMW250-06WHT	1	
-CN51		SMW250-09WHT	1	
-CN53		SMW250-02WHT	1	
-CN71		YW396-05AVBLU	1	
-CN73		YW396-05AVWHT	1	
-CN74		YW396-03AVWHT	1	
-CN77		YW396-05AVYEL	1	
-CN78		YW396-03AVYEL	2	
-D101, D102	DIODE FAST	1R5NH45	1	
-D501	DIODE RECT	D4G	4	
-D901-D904	DIODE S/W	1N4148	8	
-R409, R503-R506, R509, R604		10K 1/8	7	
-R502		10K 1/4	1	
-R201, R202, R510, R512, R603		1K 1/8	5	
-R513		2K 1/8	1	
-R514		3K 1/8	1	
-R602		1K 1/2	1	
-R507		1M 1/8	1	
-R501		470 1/2	1	
-R401-R403, R408, R410, R508, R515, R601		330 1/8	8	
-R404-R406		6.8K-F 1/8	3	
-R407		24K-F 1/4	1	
-C706, C708		472/400V	2	

8-2 Ass'y PANEL PCB



• PART LIST (PANEL : APH180HD, APH180ED, CODE NO : DB93-10550C)

CODE NO	DESCRIPTION	SPECIFICATION	Q'TY	PART
-C903		50V 4.7uF	1	
-C904		50V 104Z	1	
-C905		50V 102Z	1	
-D901-D904	DIODE-S/W	1N4148	1	
-R918-R927, R939-R941		RD 1/4 T 10K-J	13	
-R911-R917		RD 1/2 T 470-J	7	
-R944-R948		RD 1/4 T 1K-J	5	
-R943		RD 1/8 T 10-J	1	
-Q901-Q905, Q911		KSR1002	6	
-Q901-Q905, Q912		KSA708Y	6	
-IC902	DRIVE IC	KID65003AP	1	
-SW1-SW3, SW5, SW7, SW8	TACK S/W	KPT-1115D	6	
-CN11		SMAW250-11WHT	1	
-CN12		SMAW250-12WHT	1	
-CN13		SMAW250-04WHT	1	
-RM1		GP1U281R	1	
-LED-DISPLAY	SEVEN-SEG.	SSB-A4708GM	1	
-FAN, DRY, COOL, LOW, MID OPERRATING, L/ROSWING LONG, SLEEP, HIGH	LED LAMP	SV50-R32BA630RRT27(GRN)	10	
-AUTO, TIMER, POWER SAVING, TURBO, NATURAL FAN-AUTO, HEAT, HETING DEICE	LED-LAMP	SV50-R32BA630RRT27(RED)	10	

• PART LIST (PANEL : APH180CD, CODE NO : DB93-10550B)

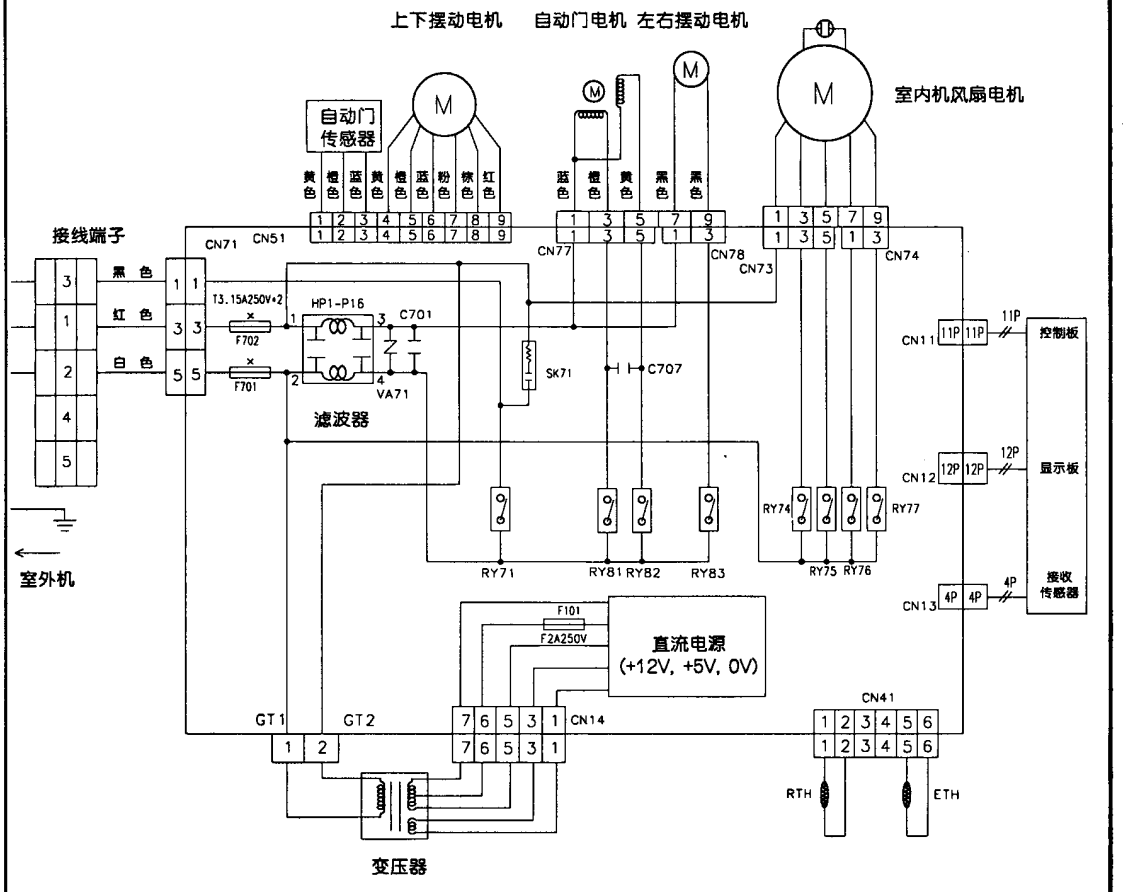
CODE NO	DESCRIPTION	SPECIFICATION	Q'TY	PART
-C903		50V 4.7uF	1	
-C904		50V 104Z	1	
-C905		50V 102Z	1	
-D901-D904	DIODE-S/W	1N4148	1	
-R918-R927, R939-R941		RD 1/4 T 10K-J	13	
-R911-R917		RD 1/2 T 470-J	7	
-R944-R948		RD 1/4 T 1K-J	5	
-R943		RD 1/8 T 10-J	1	
-Q901-Q905, Q911		KSR1002	6	
-Q901-Q905, Q912		KSA708Y	6	
-IC902	DRIVE IC	KID65003AP	1	
-SW1-SW3, SW5, SW7, SW8	TACK S/W	KPT-1115D	6	
-CN11		SMAW250-11WHT	1	
-CN12		SMAW250-12WHT	1	
-CN13		SMAW250-04WHT	1	
-RM1		GP1U281R	1	
-LED-DISPLAY	SEVEN-SEG.	SSB-A4708GM	1	
-FAN, DRY, COOL, LOW, MID OPERRATING, L/ROSWING LONG, SLEEP, HIGH	LED LAMP	SV50-R32BA630RRT27(GRN)	10	
-AUTO, TIMER, POWER SAVING, TURBO, NATURAL FAN-AUTO	LED-LAMP	SV50-R32BA630RRT27(RED)	7	

9. Wiring Diagrams

9-1 Indoor Unit

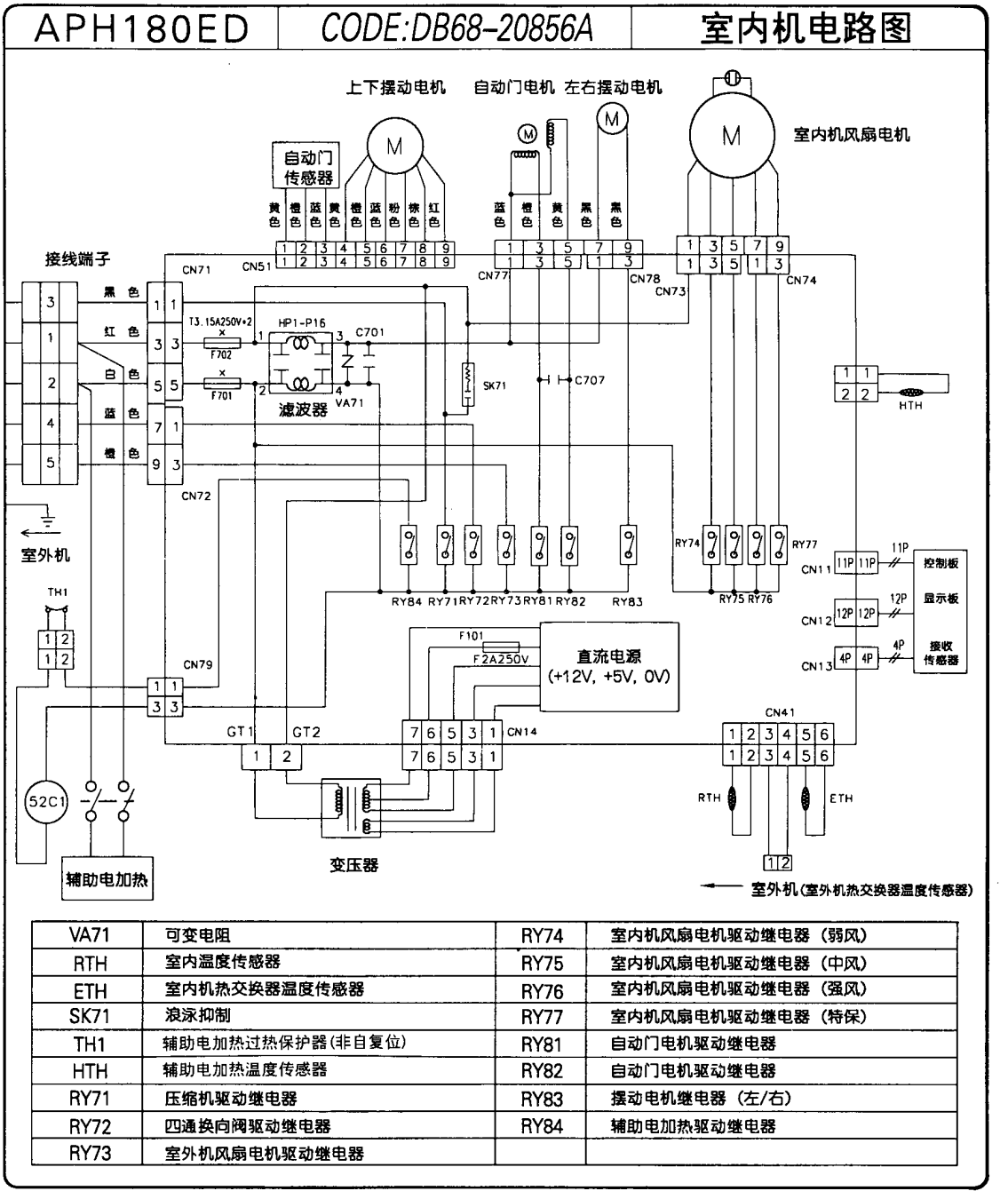
9-1-1

APH180CD | CODE:DB68-20855A | 室内机电路图



VA71	可变电阻	RY75	室内机风扇电机驱动继电器（中风）
RTH	室内温度传感器	RY76	室内机风扇电机驱动继电器（强风）
ETH	室内机热交换器温度传感器	RY77	室内机风扇电机驱动继电器（特保）
SK71	浪涌抑制	RY81	自动门电机驱动继电器
RY71	压缩机驱动继电器	RY82	自动门电机驱动继电器
RY74	室内机风扇电机驱动继电器（弱风）	RY83	摆动电机继电器（左/右）

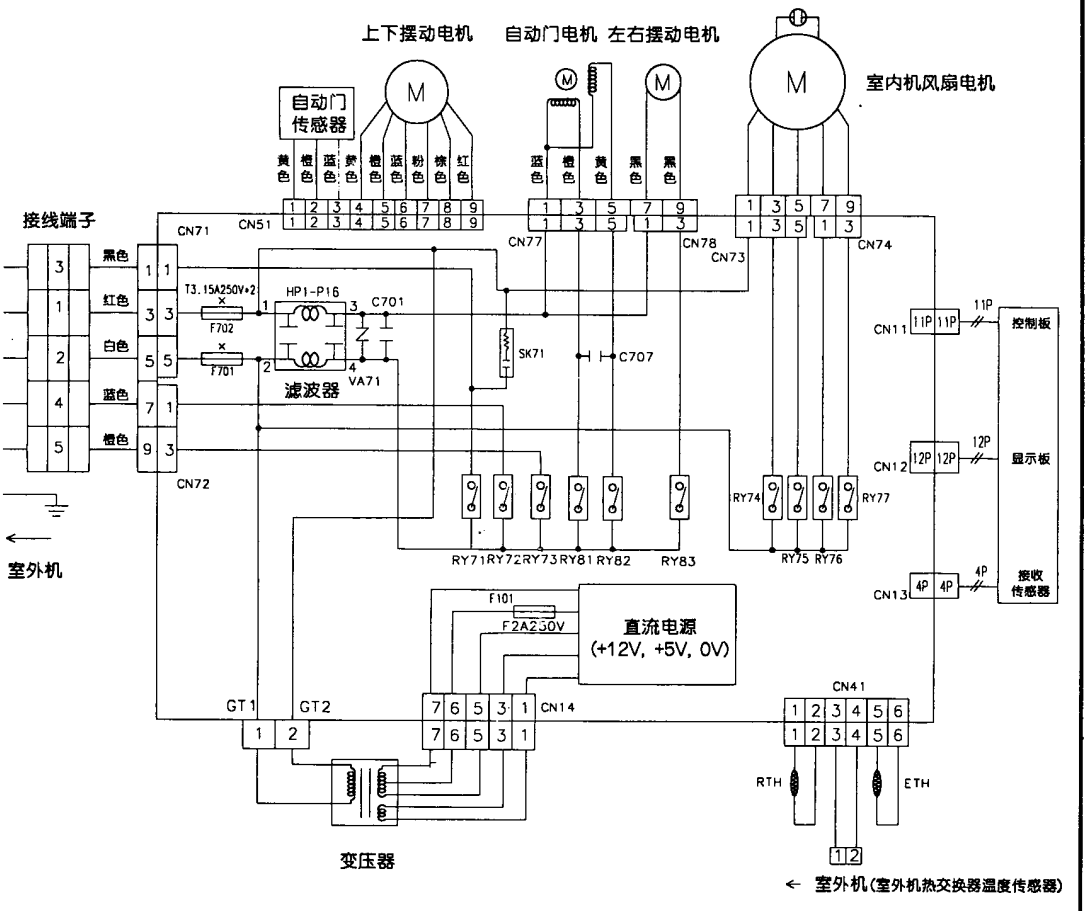
9-1-2



VA71	可变电阻	RY74	室内机风扇电机驱动继电器（弱风）
RTH	室内温度传感器	RY75	室内机风扇电机驱动继电器（中风）
ETH	室内机热交换器温度传感器	RY76	室内机风扇电机驱动继电器（强风）
SK71	浪涌抑制	RY77	室内机风扇电机驱动继电器（特保）
TH1	辅助电加热过热保护器(非自复位)	RY81	自动门电机驱动继电器
HTH	辅助电加热温度传感器	RY82	自动门电机驱动继电器
RY71	压缩机驱动继电器	RY83	摆动电机继电器（左/右）
RY72	四通换向阀驱动继电器	RY84	辅助电加热驱动继电器
RY73	室外机风扇电机驱动继电器		

9-1-3

APH180HD | CODE:DB68-20853A | 室内机电路图



VA71	可变电阻	RY74	室内机风扇电机驱动继电器（弱风）
RTH	室内温度传感器	RY75	室内机风扇电机驱动继电器（中风）
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RY71	压缩机驱动继电器	RY81	自动门电机驱动继电器
RY72	四通换向阀驱动继电器	RY82	自动门电机驱动继电器
RY73	室外机风扇电机驱动继电器	RY83	摆动电机继电器（左/右）

MEMO

UPDA TE LOG SHEET				
Application date	Page	Part#	Note(Cause & Solution)	S/Bulletin#

Use this page to keep any special servicing information. (Service Bulletin, etc.)
If only parts number changes, Just change parts number directly on parts list.
And if you need more information, please see the service bulletin

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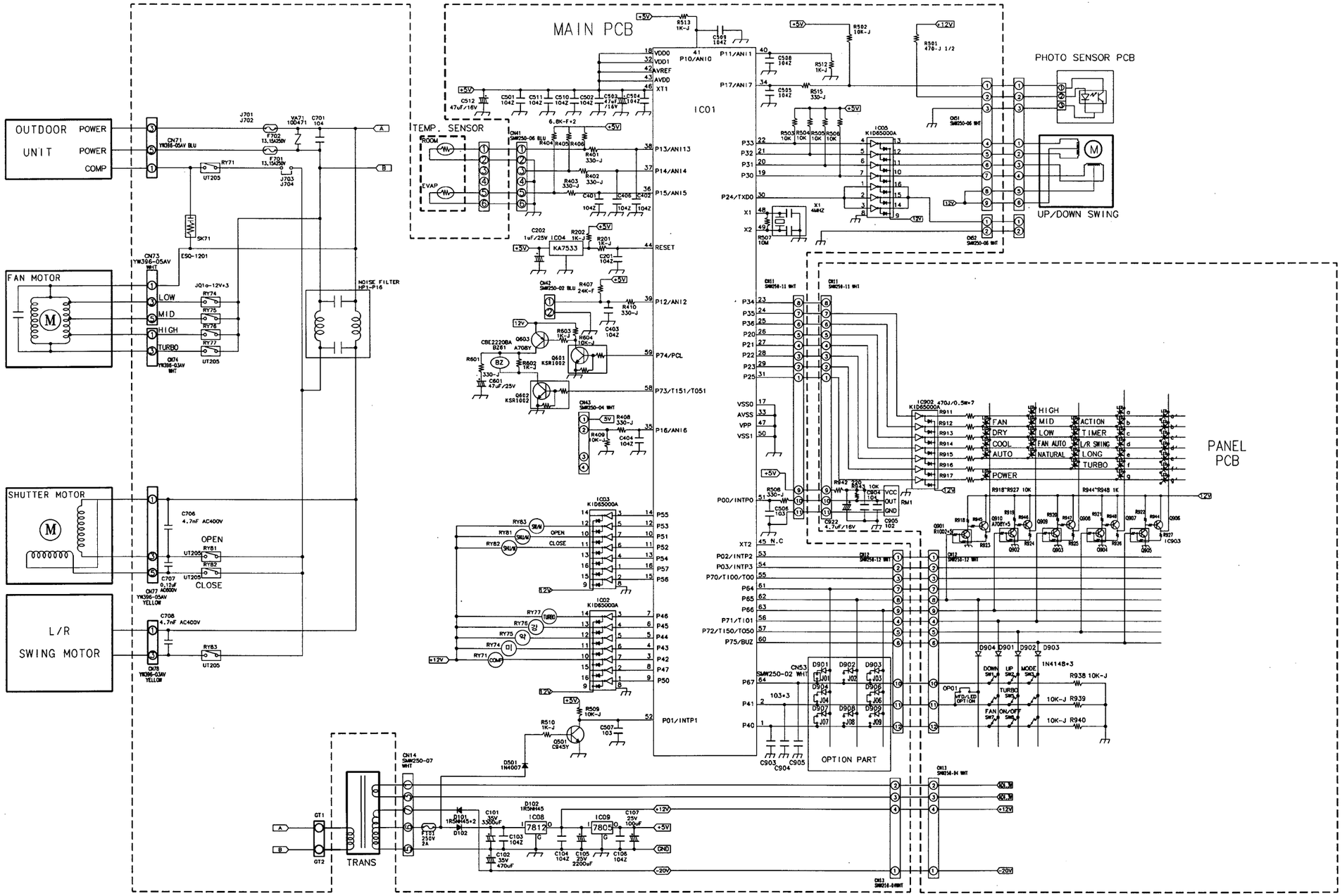
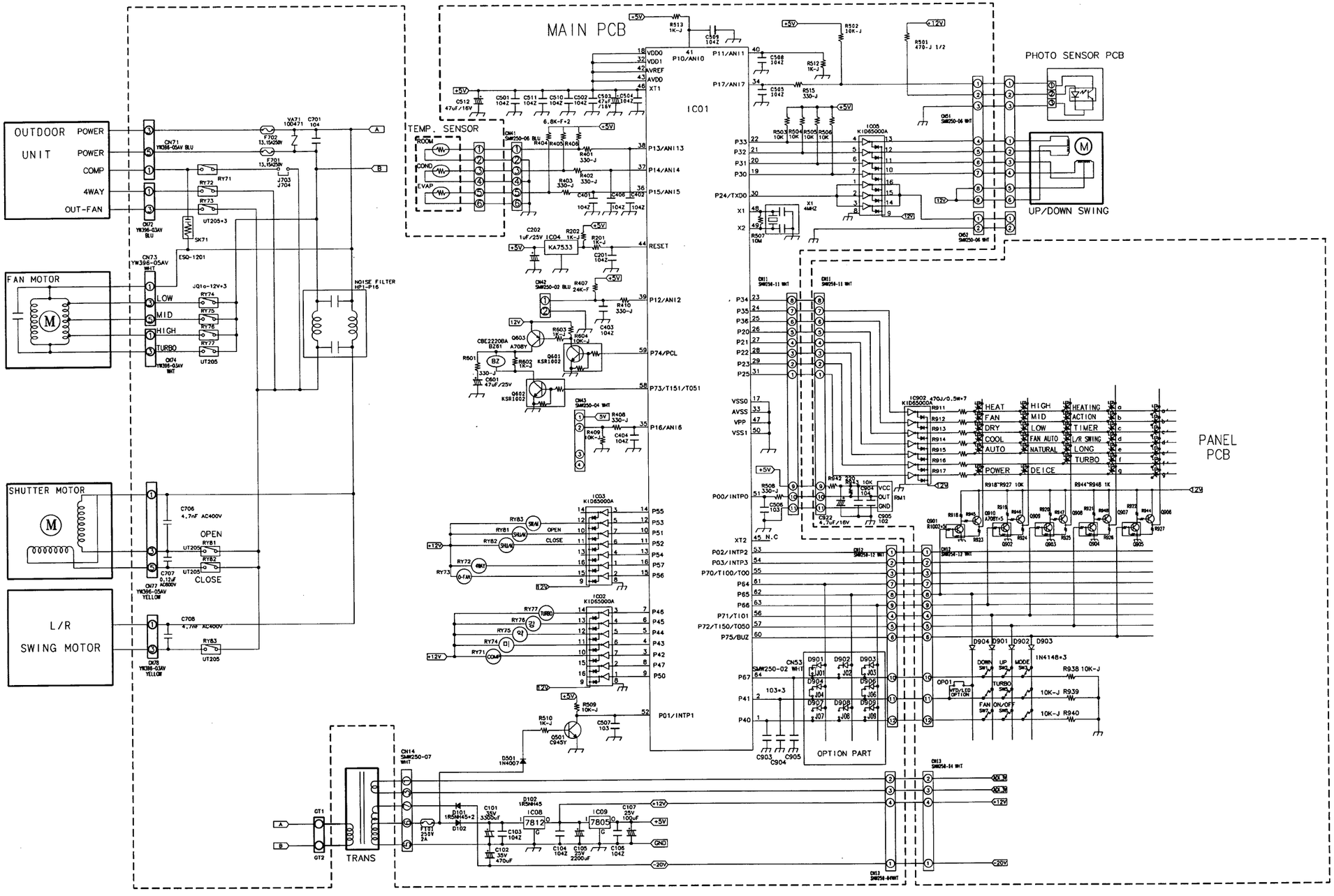
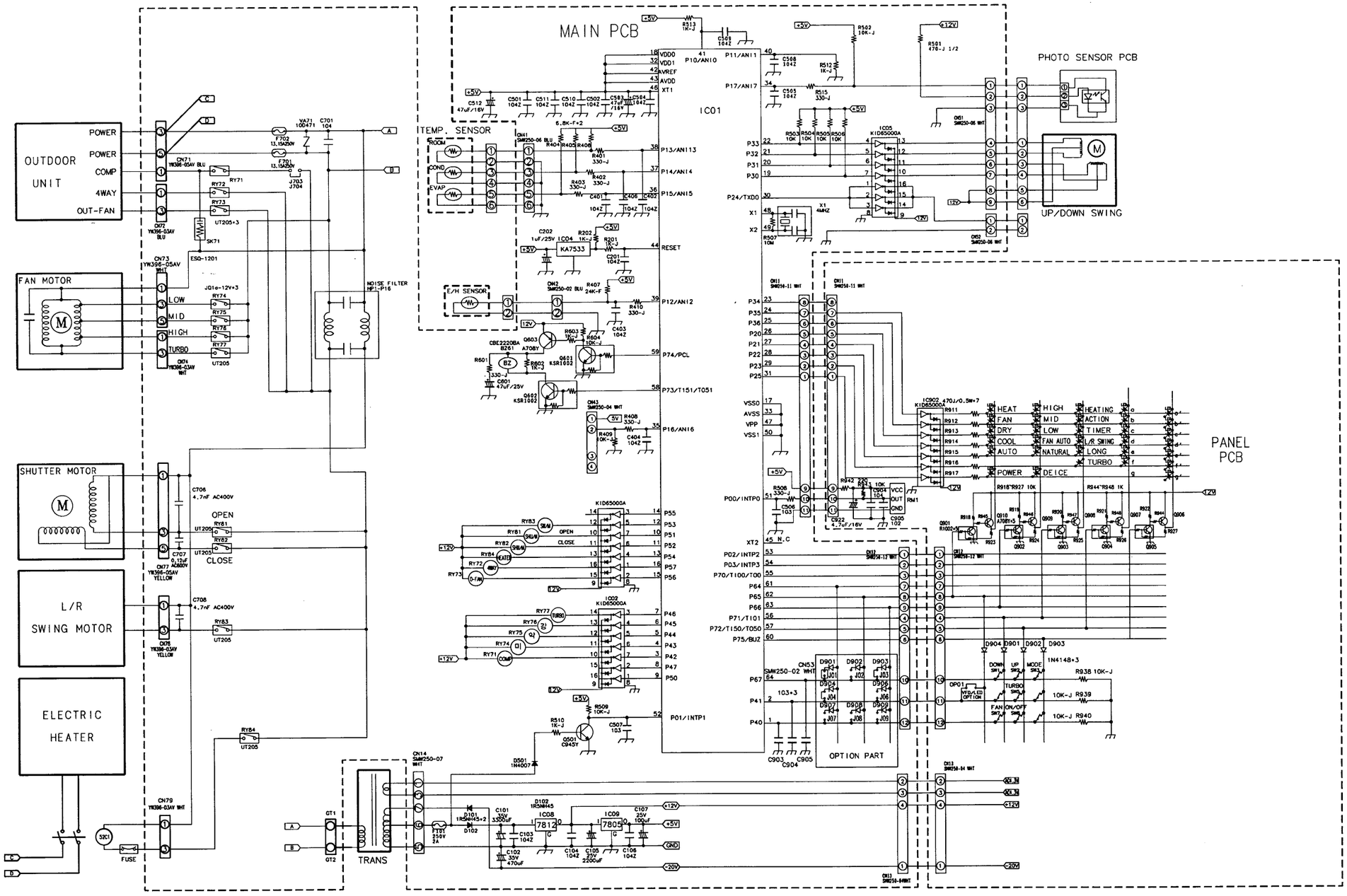
10. Schematic Diagrams

10-1 Indoor Unit




MAIN PCB
IC01
OUTDOOR UNIT
POWER
POWER
COMP
4WAY
OUT-FAN
FAN MOTOR
LOW
MID
HIGH
TURBO
SHUTTER MOTOR
OPEN
CLOSE
L/R SWING MOTOR
TEMP. SENSOR
ROOM
COND
EVAP
PHOTO SENSOR PCB
UP/DOWN SWING
NOISE FILTER
TRANS
OPTION PART
PANEL PCB
HEAT
FAN
DRY
COOL
AUTO
HIGH
MID
LOW
FAN AUTO
NATURAL
HEATING
ACTION
TIMER
L/R SWING
LONG
TURBO
POWER
DEICE


MAIN PCB
OUTDOOR UNIT
POWER
POWER
COMP
4WAY
OUT-FAN
FAN MOTOR
LOW
MID
HIGH
TURBO
SHUTTER MOTOR
OPEN
CLOSE
L/R SWING MOTOR
ELECTRIC HEATER
FUSE
TRANS
TEMP. SENSOR
ROOM
COND
EVAP
E/H SENSOR
IC01
KA7533
7812
7805
PHOTO SENSOR PCB
UP/DOWN SWING
PANEL PCB
HEAT
FAN
DRY
COOL
AUTO
HIGH
MID
LOW
FAN AUTO
NATURAL
HEATING
ACTION
TIMER
L/R SWING
LONG
TURBO
DEICE
POWER
OPTION PART